

Staff Assessment and
Draft Environmental Impact Statement
and
Draft California Desert Conservation Area Plan Amendment

**RIDGECREST
SOLAR POWER
PROJECT**

Application For Certification (09-AFC-9)
Kern County



DOCKET

09-AFC-9

DATE _____

REC'D MAR 26 2010

**U.S. BUREAU
OF LAND
MANAGEMENT
and
CALIFORNIA
ENERGY
COMMISSION**

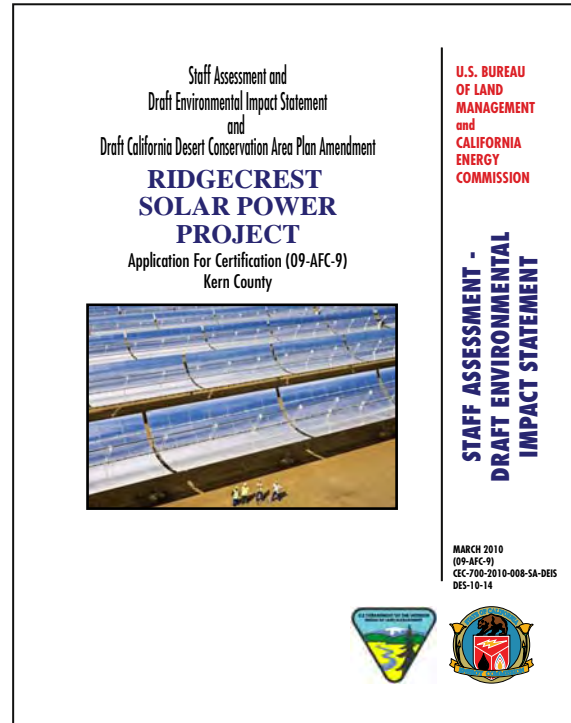
**STAFF ASSESSMENT -
DRAFT ENVIRONMENTAL
IMPACT STATEMENT**

**MARCH 2010
(09-AFC-9)
CEC-700-2010-008
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**RIDGECREST SOLAR POWER PROJECT
(09-AFC-9)
STAFF ASSESSMENT/DRAFT ENVIRONMENTAL IMPACT STATEMENT**

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EXECUTIVE SUMMARY

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INTRODUCTION

Solar Millennium LLC (“Applicant”) filed an application with the U.S. Bureau of Land Management (BLM) for a Right-of-Way (ROW) grant on public land (CACA 049016) together with a related Plan of Development (POD) 4th revision dated February 2, 2010, a Draft Land Use Plan Amendment (DPA) to the California Desert Conservation Area (CDCA) as amended, and is seeking approval to develop the Ridgecrest Solar Power Project (RSPP). The applicant also filed an Application for Certification (09-AFC-9) with the Energy Commission to license the same project. The filing of these applications triggered the need for both agencies to conduct an environmental review of the proposed project. When considering a project for licensing, the Energy Commission is the lead state agency under the California Environmental Quality Act (CEQA), and its certified regulatory program is functionally equivalent to the preparation of an Environmental Impact Report (EIR). Similarly, for the purpose of considering the application for a ROW grant and POD, the BLM is the lead federal agency under the National Environmental Policy Act (NEPA).

This Staff Assessment/Draft Plan Amendment/Draft Environmental Impact Statement (SA/DPA/DEIS) contains an independent evaluation of the RSPP. The SA/DPA/DEIS contains analyses similar to an EIR required by CEQA, and also contains analyses required for a DPA and a DEIS, prepared in accordance with NEPA. Overall, the document contains an independent assessment of the project’s design and engineering, and identifies potential impacts to the environment; the public’s health and safety, and determines whether the project conforms to all applicable laws, ordinances, regulations and standards (LORS).

The SA/DPA/DEIS is a joint, environmental document because it was generated and published by the BLM and the California Energy Commission (CEC) to meet the needs of both CEQA and NEPA. The joint document approach was implemented because it is in the best interest of the BLM and the Energy Commission to share in the preparation of a single environmental document, in order to avoid duplication of staff efforts, to share staff expertise and information, to promote intergovernmental coordination at the local, state, and federal levels, and to facilitate public review by providing a single comprehensive document for a more efficient environmental review process.

PROPOSED PROJECT LOCATION AND GENERAL PROJECT DESCRIPTION

PROJECT LOCATION AND VICINITY

The RSPP is proposed to be developed on approximately 2,000 acres of the 3,995-acre site, currently managed by the BLM. The project site is located in north eastern Kern County, along U.S. Highway 395, just west of the China Lake Boulevard exit. The site is

approximately five miles southwest of Ridgecrest, California. Ridgecrest is at the southwestern boundary of the China Lake Naval Air Weapons Station (NAWS).

PROPERTY DESCRIPTION

The proposed RSPP is entirely on Federal land, described as follows: Township 27 and 28 South, Range 39 East The applicant filed an amended by SF-299 application with the BLM on February 9, 2010 adjusting the previous acreage from 3,920 to approximately 3,995 to avoid El Paso Wash that was within the project's original footprint. Under the amended application, construction and operation of the project would disturb a total of about 1,944 acres. As such, any difference between the total acreage listed in the Right of Way application (3,995) and the total acreage required for project construction and operation (approx. 1,944) would be reduced if authorized to the total disturbed area.

The following Kern County Assessor's Parcel Number's identify the parcels within the overall ROW boundary for the proposed RSPP:

APN 341-091-08	APN 341-091-10	APN 341-091-11	APN 341-110-01
APN 341-110-02	APN 341-110-03	APN 341-110-05	APN 341-110-06

GENERAL PROJECT DESCRIPTION

The proposed RSPP is a concentrated solar powered, electric generating facility that would have a nominal electrical output of 250 megawatts (MW). The process for electric power generation would be to utilize parabolic trough, solar collectors to concentrate solar energy onto heat collection elements that contain a fluid, known as "heat transfer fluid" (HTF). After being heated by the solar troughs, the HTF is run through a heat exchanger where it boils water for conversion to steam. In the next stage, the high pressure steam drives a Rankine-cycle reheat, steam turbine, electric generator.

The project would use an air-cooled condenser (ACC), commonly referred to as "dry cooling". The ACC would eliminate the need to use water for power plant cooling and eliminate visible plume associated with wet cooling towers. Total water consumption (balance of plant) for the 250-MW facility is estimated at approximately 150 acre-feet per year, which is proposed to be supplied by the Indian Wells Valley Water District (IWWVD) via a new pipeline. The new 12 to 16-inch diameter, five-mile long water pipeline would be installed within the Brown Road and China Lake Boulevard rights-of-way to a point of connection with the IWWVD water tank.

A new 230kV transmission line from a new switchyard will connect to a new substation that will in turn interconnect with Southern California Edison's (SCE) existing 230kV Inyokern/Kramer Junction transmission line passing west of the Project site. Additionally, the Project will require the relocation of roughly 10,000 feet (1.6 miles) of two existing transmission lines owned and operated by SCE. The first is a double-circuit 230kV line (with one of the circuits currently operated at 115kV) and the second is a double-circuit 115kV line.

For a more detailed description of the proposed project; and the alternative projects and actions that were considered and analyzed, please see the **PROJECT DESCRIPTION** section.

PUBLIC NOTICES, OUTREACH, AND PUBLIC AND AGENCY INVOLVEMENT

BLM'S INITIAL PUBLIC NOTICE AND OUTREACH

BLM staff issued a formal Notice of Intent (NOI) to prepare an Environmental Impact Statement for the RSPP, and also identified the beginning and end of the Scoping Period. The formal notice was published in the Federal Register, Volume 74, No. 224, Monday, November 23, 2009.

On December 8, 2009, the BLM staff mailed out public notices, informing the public of the NOI. This information was also provided on the BLM's Ridgecrest Field Office's internet website which is also connected to the California Desert District's renewable energy website.

On January 5, 2010 the BLM held a publicly noticed Scoping Meeting at the Ridgecrest, City Hall, Council Chambers in Ridgecrest, California. On January 6, 2010 the BLM held a second publicly noticed Scoping Meeting at the Inyokern, Town Hall in Inyokern, California. Scoping comments were received from the public and are included in this SA/DPA/DEIS, in Appendix 1.

ENERGY COMMISSION STAFF'S PUBLIC OUTREACH

Energy Commission staff provides formal notices to property owners within 1,000 feet of the proposed site and within 500 feet of a linear facility (such as transmission lines, gas lines and water lines). Staff mailed the public notices on September 12, 2009, informing the public, agencies and elected officials of the Commission's receipt and availability of the application, 09-AFC-9. Additionally, each notice contained a link to a website the Energy Commission set up for the project:
http://www.energy.ca.gov/sitingcases/solar_millennium_ridgecrest/index.html.

Libraries

Concurrent with the initial public notice of September 12, 2009, the Energy Commission staff also sent copies of the RSPP AFC to the following libraries:

Ridgecrest Public Library 131 E Las Flores Ave Ridgecrest, CA 93555-3648	Walter Stiern Memorial Library 3000 College Heights Blvd Ridgecrest, CA 93555-9571
Boron Library 26965 Twenty Mule Team Rd Boron, CA 93516-1550	San Bernardino Library 82805 Mountain View St Trona, CA 93562-1920
Kern County Library 9507 California City Blvd California City, CA 93505-2280	Naval Air Warfare Tech Library 1 Administration Cir Ridgecrest, CA 93555-6104

In addition, to these local libraries, copies of the AFC were also made available at the Energy Commission's Library in Sacramento, the California State Library in Sacramento, as well as, state libraries in Eureka, Fresno, Los Angeles, San Diego, and San Francisco.

Energy Commission's Public Adviser's Office

The Energy Commission's outreach program is also facilitated by the Public Adviser's Office (PAO). This is an ongoing process that to date has included, paid advertising in the Ridgecrest Daily Independent on December 30, 2009 and January 2, 2010, and paid advertising in the Kern Valley Sun on December 30, 2009. The PAO also requested public service announcements at a variety of organizations including Ridgecrest City Council, three separate Chambers of Commerce, one television station and two radio stations (CEC 2010s). These notices informed the public of the Commission's receipt of the RSPP allocation 09-AFC-9 and invited the public to attend the Public Site Visit (proposed RSPP site) and Informational Hearing/BLM Scoping Meeting.

BLM AND CEC PUBLIC WORKSHOPS

The BLM staff together with Energy Commission staff publicly noticed and held workshops in Ridgecrest, CA, on the following days: December 15, 2009, January 5, 2010 and January 6, 2010 (CEC 2009i and CEC 2009n). During each of these workshops specific time for public comment was allocated in the meeting agenda and public comment was taken during the morning and afternoon sessions of each workshop. These workshops provided a public forum for the applicant, intervener, staff and cooperating agencies to interact regarding the more substantive project issues. At the workshops, staff also provided preaddressed forms for public comment and encouraged the public to use the forms to submit written comments which some members of the public did. Agency Coordination and government-to-government consultation with Native American communities

Policy Level and Programmatic Agency Coordination

On August 8, 2007, the California Energy Commission and the Bureau of Land Management signed an Memorandum of Understanding (MOU) for the purpose on agreeing to prepare joint environmental documents for proposed, solar thermal projects which fall under the jurisdiction of both agencies. The MOU outlines roles and responsibilities of the cooperative process.

On October 12, 2009, California's Governor, Arnold Schwarzenegger, signed an MOU with the U.S. Department of the Interior's Secretary, Ken Salazar. The purpose of the MOU "is to direct California Agencies and Department of the Interior Agencies...to take the necessary actions to further the implementation of the Governors Executive Order S-14-08 and the Secretary's Order 3285 in a cooperative, collaborative, and timely manner". The agencies identified to in the MOU are the California Department of Fish and Game (CDFG), California Energy Commission (CEC), Bureau of Land Management (BLM) and the U.S. Fish and Wildlife Service (FWS). The MOU also outlined specific objectives.

On January 26, 2010, the U.S. Department of the Interior's Bureau of Land Management signed a Memorandum of Understanding (MOU) with the U.S. Department of Energy's (DOE) Loan Guarantee Program (LGP) office. The purpose of the MOU is to provide a framework for the BLM and the LPG to cooperate in preparing Environmental Assessments, Environmental Impact Statements for renewable energy project's that require federal actions be taken by both the BLM and the LGP.

Project Specific Agency Coordination

On September 12, 2009, the Energy Commission staff sent a notice of receipt and a copy of the RSPP Application for Certification to all local, state, and federal agencies that might be affected by the proposed project. Staff continues to seek cooperation and or comments from regulatory agencies that administer LORS which may be applicable to proposed project. These agencies include the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, California Coastal Commission, State Water Resources Control Board/Regional Water Quality Control Board, California Department of Fish and Game, California Air Resources Board and Kern County, among others.

Staff has worked closely with the CDFG and the FWS to evaluate the proposed RSPP. Both CDFG and the FWS have attended and participated in public workshops to address the wildlife issues and related "Incidental Take Permits" required for the proposed RSPP. Additionally, staff has benefited from the cooperation of the CDFG in evaluating the proposed streambed alteration agreements that would normally fall under CDFG's jurisdiction if not for the Energy Commission's "in lieu" permitting authority.

Staff also worked closely with the Regional Water Quality Control Board (RWQCB), Lahontan District. The RWQCB assisted staff in evaluating the proposed RSPP with respect to potential impacts on water quality and the proposed reuse of process water on site for mirror washing. The RWQCB has been instrumental in providing staff with suggested language for waste discharge requirements.

Staff has also worked closely with Kern County to identify and apply county LORS, gather information regarding potential impacts to county services, develop a mitigation program to offset impacts to potable water resources, and consider the county's suggested mitigation measure for impacts to traffic and transportation resources.

Government to Government Consultation - Notification of the Local Native American Communities

The BLM staff sent letters to various tribes on June 17, 2009. The letter provided an initial briefing on the project and a request for any comments and concerns. The deadline for response was Aug. 7, 2009. The letters were mailed to the following six (6) recipients:

1. Mr. Harold William, Tribal Chair; Kern Valley Indian Council, PO Box 147, Caliente CA 93518; primary federally unrecognized tribe in eastern Kern County, representing Kawaiisu, Tubatulabals, Paiute, and Yokuts native peoples.
2. Mr. Bob Robinson, Tribal Historic Preservation Officer, Kern Valley Indian Council, PO Box 401, Weldon CA 93283
3. Ms. Donna Miranda-Begay, Tribal Chair; Tubatulabals of Kern Valley Tribe; primary federally unrecognized tribe in eastern Kern County representing Tubatulabals of the Miranda and White Blanket tribal allotments, Kern River Valley.
4. Mr. Ron Wermuth, Council Chair; Monache Intertribal Council, PO Box 168, Kernville CA 93238; oldest Native American community organization in Kern River Valley.
5. Ms. Arlene Apalatea, Co-Chair, Nuui Cunni Interpretative Center, PO Box 3984, Wofford Heights CA 93285; operated the Nuui Cunni Center under Special Use Permit from Sequoia National Forest for public education on the culture of the Indians of Kern County. Also known as the Kern River Paiute Council, and Raymond Vega.
6. Ms. Kathy Paradise, Program Lead, Lake Isabella Office, Owens Valley Career Development Center, PO Box 2895, Lake Isabella CA 93240; community social outreach organization in Lake Isabella area.

A second set of letters were mailed to various tribes on October 21, 2009. The letters provided a reminder, contained in a consultation letter regarding three wind energy projects near city of Mojave, eastern Kern County, that the BLM was also reviewing the RSP project, and again asked for comments and any concerns. The deadline for response was set for December 18, 2009. The letters were mailed to the following six (6) recipients:

1. Tribal Chair, Kern Valley Indian Council, PO Box 1010, Lake Isabella CA 93240
2. Mr. Bob Robinson, Tribal Historic Preservation Officer, Kern Valley Indian Council
3. Ms. Donna Miranda-Begay, Tribal Chair; Tubatulabals of Kern Valley Tribe
4. Mr. Ron Wermuth, Council Chair; Monache Intertribal Council

5. Ms. Arlene Apalatea, Co-Chair, Nuui Cunni Interpretative Center
6. Ms. Kathy Paradise, Lake Isabella Office, Owens Valley Career Development Center

A third set of letters were mailed to tribes on February 5, 2010 and provided an update on the project review, CEC-BLM workshops that were held in December 2009 and January 2010; Native American input that was received, the SA/EIS being released soon, cultural resources survey in summer 2009, invited to consult on eligibility evaluations of archeological sites; invited to be consulting on the Programmatic Agreement (PA) being prepared by BLM, State Historic Preservation Office (SHPO), and the Advisory Council on Historic Preservation (ACHP). The letter identified the deadline for response as March 12, 2010. The letters were mailed to the following five (5) recipients:

1. Ms. June Price, Tribal Chair, Kern Valley Indian Council,
2. Mr. Bob Robinson, Tribal Historic Preservation Officer, Kern Valley Indian Council
3. Ms. Donna Miranda-Begay, Tribal Chair; Tubatulabals of Kern Valley Tribe
4. Mr. Ron Wermuth, Council Chair; Monache Intertribal Council
5. Ms. Arlene Apalatea, Co-Chair, Nuui Cunni Interpretative Center

SUMMARY OF SCOPING COMMENTS IN RESPONSE TO THE BLM'S NOTICE OF INTENT

Summary of the Scoping and Draft Comment Process

The BLM published a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) on November 23, 2009 in the Federal Register. Publication of the NOI began a 30-day comment period which ended on January 21, 2009. BLM provided a website with Project information that also described the various methods of providing public comment on the Project including an e-mail address where comments could be sent electronically.

Notification for a public Scoping Meeting held on January 5, 2010 appeared in the Riverside Press Enterprise and several other local media and newspapers on November 24, 2009. Notification was also published on the BLM website on November 23, 2009.

A public Scoping Meeting was held on January 5, 2010 at the Ridgecrest City Hall located at 100 W. California Ave., Ridgecrest, California. A presentation describing the Project was made by Solar Millennium, LLC with presentations describing the environmental review process presented by members of the BLM and CEC. One-hundred and twenty attendees were documented by signing in on a voluntary sign-in sheet.

Forty-eight comment letters were received between both agencies within the comment period ending on December 21, 2009.

Issues were identified by reviewing the comment documents received. Many of the comments identified similar issues; all of the public comment documents were reviewed and the following section provides a summary of the issues, concerns, and/or questions raised. Issues have been grouped into one of the three following categories:

- Issues or concerns that could be addressed by effects analysis;
- Issues or concerns that could develop an alternative and/or a better description or qualification of the alternatives;
- Issues or concerns outside the scope of the EIS.

The comments discussed below are paraphrased from the original comment letters. To a minor degree, some level of interpretation was needed to identify the specific concern to be addressed. Many of the comments identified similar issues; to avoid duplication and redundancy similar comments were grouped together and then summarized. Original comment letters may be reviewed upon request at the BLM California Desert District at 22835 Calle San Juan De Los Lagos, Moreno Valley, California, 92253, during normal business hours, from 8:00 am to 4:00 pm.

Summary of Comments (Matrix/Table)

SCOPING COMMENTS MATRIX JANUARY 5TH AND 6TH, 2010 SCOPING MEETINGS																					
NAME	DATE	PROCESS/FAST TRACK/LNP	ALTERNATIVES	AIR / HEALTH	BIOLOGY / BOTANY/RES	CLIMATE CHANGE	CULTURAL / NATIVE AMERICAN	ECONOMIC/SOCIOECONOMIC	OTHER_CONSIDERATIONS/CUMULATIVE IMPACT	TRAFFIC/ACCESS	WATER/HYDROLOGY	VISUAL/VRM/AESTHETICS	WILDLIFE/T&E/HABITAT	LIGHTING/PUBLIC UTILITIES	DESIGN	FLOODING	RECREATION/OHV	SOIL/GEOLOGY	HAZMAT	NOISE	ADD TO MAILING
A. Archerd	12/10/2009									X											
A. DeMay	1/14/2010										X										
B. & S. Steele	1/14/2010											X									
B. Hughes	12/6/2009-12/7/2009				X				X		X	X	X		X			X			
B. Parker	1/20/2010																				X
C. Lyle Fisher	1/11/2010								X												
Greg Suba, California Native Plant Society	12/23/2009				X				X		X	X									
California Unions for Reliable Energy (CURE)	12/9/2009			X			X	X	X		X	X	X		X			X		X	
Center for Biological Diversity	12/23/2009	X		X	X	X			X		X	X	X					X			
Coplay	12/9/2009																				X
D. Burdick	1/21/2010			X																	
D. Fallgatter	1/20/2010										X				X						
D. G. Burnett	1/20/2010			X	X				X		X		X								
D. Maggie	1/21/2010			X							X		X	X							
D. Miranda-Begay, Tribal Chairwoman Tubatulabals of Kern Valley Tribe	12/14/2009				X		X	X													

**SCOPING COMMENTS MATRIX
JANUARY 5TH AND 6TH, 2010 SCOPING MEETINGS**

NAME	DATE	PROCESS/FAST TRACK/LNP	ALTERNATIVES	AIR / HEALTH	BIOLOGY / BOTANY/RES	CLIMATE CHANGE	CULTURAL / NATIVE AMERICAN	ECONOMIC/SOCIOECONOMIC	OTHER CONSIDERATIONS/CUMULATIVE IMPACT	TRAFFIC/ACCESS	WATER/HYDROLOGY	VISUAL/VRM/AESTHETICS	WILDLIFE/T&E/HABITAT	LIGHTING/PUBLIC UTILITIES	DESIGN	FLOODING	RECREATION/OHV	SOIL/GEOLOGY	HAZMAT	NOISE	ADD TO MAILING
S. Silliman, Desert Tortoise Council	1/21/2010				X								X								
Don Peterson	1/21/2010		X		X		X		X		X				X						
E. Copley	12/9/2009																				X
E. Middlemiss	1/20/2010										X		X								
Fish and Wildlife Services	12/23/2009		X		X								X								
Friends of Last Chance Canyon - Charles Hattendorf	1/19/2010			X							X										
J. & J. Bell	12/14/2009									X											
J. & S. Tipton	1/14/2010										X										
J. Aardahl Defenders of Wildlife	1/19/2010		X		X								X								
J. Decker	1/18/2010			X	X						X		X								
J. Robinson	1/14/2010				X																
J. Westbrook	11/26/2009				X								X								
K. Cox	12/16/2009																				X
K. Emmerich	11/28/2009	X				X															
K. Fite Western Watersheds Project	11/30/2009		X		X	X			X		X	X	X					X			
Kern County Planning Department	1/5/2010	X						X		X						X					

SCOPING COMMENTS MATRIX
JANUARY 5TH AND 6TH, 2010 SCOPING MEETINGS

NAME	DATE	PROCESS/FAST TRACK/LNP	ALTERNATIVES	AIR / HEALTH	BIOLOGY / BOTANY/RES	CLIMATE CHANGE	CULTURAL / NATIVE AMERICAN	ECONOMIC/SOCIOECONOMIC	OTHER CONSIDERATIONS/CUMULATIVE IMPACT	TRAFFIC/ACCESS	WATER/HYDROLOGY	VISUAL/VRM/AESTHETICS	WILDLIFE/T&E/HABITAT	LIGHTING/PUBLIC UTILITIES	DESIGN	FLOODING	RECREATION/OHV	SOIL/GEOLOGY	HAZMAT	NOISE	ADD TO MAILING
Kerncrest Chapter National Audubon Society	1/12/2010	X			X							X	X	X							
L. Cunningham Basin & Range Watch	1/24/2010								X												
L. Sutton	1/9/2010		X																		
M.J. McEwan Law Office on behalf of Desert Tortoise Preserve Council	1/21/2010	X	X									X	X				X				
M. Beck	1/17/2010									X											
M. Boggs	1/21/2010		X	X	X				X		X										
M. Decker	1/20/2010			X						X											
M. Gire	1/24/2010								X												
M. Grossglass	12/8/2009								X												
M. J. Connor PH.D Western Watershed Project	1/21/2010		X		X					X	X		X					X			
M. J. Connor PH.D Western Watershed Project	12/23/2009	X	X		X	X	X		X		X	X	X					X			
M. Lloyd	1/19/2010										X		X								
M. Luebs-Goedecke	1/15/2010		X										X								

SCOPING COMMENTS MATRIX
JANUARY 5TH AND 6TH, 2010 SCOPING MEETINGS

NAME	DATE	PROCESS/FAST TRACK/LNP	ALTERNATIVES	AIR / HEALTH	BIOLOGY / BOTANY/RES	CLIMATE CHANGE	CULTURAL / NATIVE AMERICAN	ECONOMIC/SOCIOECONOMIC	OTHER CONSIDERATIONS/CUMULATIVE IMPACT	TRAFFIC/ACCESS	WATER/HYDROLOGY	VISUAL/VRM/AESTHETICS	WILDLIFE/T&E/HABITAT	LIGHTING/PUBLIC UTILITIES	DESIGN	FLOODING	RECREATION/OHV	SOIL/GEOLOGY	HAZMAT	NOISE	ADD TO MAILING
Off-Road Business Association Inc	1/18/2010			X		X															
P. Dejohn	2/5/2010			X				X	X												
P. LePome	1/15/2010																				
R. Bransfield, USFWS, Ventura office	12/23/2009		X		X																
R Kelso	12/15/2009		X																		
R. Thompson, P.E.	1/21/2010								X												
S. Ellis	12/30/2009		X																		
S. Steele	1/14/2010																				
T. Budlong	11/29/2009 - 12/15/2009	X	X						X												
A. McPherson - U.S. EPA	11/30/2009	X	X	X	X		X	X	X	X	X		X			X		X	X		
T. Middlemiss, Kerncrest Chapter Nat'l Audubon Society	12/15/2009 & 1/12/10		X								X		X								
V Mitchell	1/5/2010-1/10/2010-1/11/2010		X								X	X		X	X			X			X
Charles Hattendorf	1/19/2010			X			X				X	X		X							
Daniel G. Burnett	1/20/2010		X	X						X	X										

Identified Scoping Concerns and Issues

A. Resource Areas and Cumulative Impacts

Purpose and Need

- Project description should not be narrowly defined to rule out feasible alternatives

Air Resources (Air sheds)

- Greenhouse gas emissions/climate change impacts on plants, wildlife, and habitat adaptation
- Planning for species adaptation due to climate change
- Discussion of how projected impacts could be exacerbated by climate change such as water supply and reliability
- Quantify and disclose anticipated climate change benefits of solar energy
- Discussion of trenching/grading/filling and effects on carbon sequestration of the natural desert

Soils Resources

- Baseline conditions should be described and if the site is disturbed or impaired
- Impacts to desert soils
- Site area is prone to flooding; analysis must address how this may change
- Increased siltation during flooding and dust (see public health as well)
- Disturbance of soils in desert locations can lead to the introduction of invasive weeds
- Preparation of a drainage, erosion, and sediment control plan

Water Resources (Surface and Ground water)

- Effects of additional groundwater pumping in conjunction with other groundwater issues
- Groundwater impacts
- A description of the water rights permitting process and the status of water rights in the basin, including an analysis of whether the water has been over allocated
- An analysis of water reduction alternatives and alternative water sources
- Mitigation options require careful preparation and monitoring
- Water supply impacts related to dust control, fire prevention and containment, vegetation management, sanitation, equipment maintenance, construction, and human consumption

Biological Resources

- If there are threatened or endangered species present, recommend BLM consult with USFWS and prepare a Biological Opinion under Section 7 of the ESA
- Impacts to all known species, not just special status, should be analyzed to assure ecosystem level protection—permanent loss of 4,000 acres of habitat and associated species is significant and cannot be mitigated
- Define and discuss the condition of threatened species in terms of recovery or decline and how use of this site affects these circumstances
- Eliminate all grazing in the area and add fencing to exclude Off-Highway Vehicle (OHV) trails and use
- Maximize options to protect habitat and minimize habitat loss and fragmentation
- Impacts associated with constructing fences
- Seasonal surveys should be performed for sensitive plant and animal species
- The proposed site is too important to the desert tortoise survival; alternative site is required
- The potential impact to the Mohave ground squirrel at this location cannot be mitigated
- Acquisition of lands for conservation should be part of mitigation strategy
- Mitigation should be 5:1 ratio for habitat removed
- Adaptive management should be considered in program design
- Mitigation should consider the removal of grazing land in habitat designated areas
- Impacts regarding habitat fragmentation and loss of connectivity
- Impact on washes
- Assess if ravens or other predators will be attracted to mitigation sites.

Vegetation Resources (Vegetative communities, priority and special status species)

- Identify all petitioned and listed threatened and endangered species and critical habitat that might occur within the Project area
- Include a full floral inventory of all species encountered on-site
- Seasonal surveys should be performed for sensitive plant species—lack of fall surveys may under represent onsite plants
- If transplantation is to be a part of the mitigation strategy, a detailed plan must be included as part of the EIS/SA
- Assess project impacts affecting plant taxa occurring within the project area that are considered rare within California but more common elsewhere
- Impacts to existing plant communities

Wildlife Resources (Priority species, special status species)

- Desert tortoise; high population density translocation proposed results in high mortality; portion of site designated as critical habitat for the MGS (Mohave Ground Squirrel).
- Impacts to the following species:
 - Burrowing owl
 - Mojave Fringe Toed Lizard
 - Desert Kit Fox
- Impacts to wildlife movement corridors
- Preserve large landscape-level migration areas

Cultural Resources

- Have archaeological sites been evaluated pursuant to the National Register of Historic Places criteria?
- Site has significant Native American history
- Evaluate impacts affecting sacred sites and sacredness.
- Evaluate potential impacts on archeological, cultural, and historical resources in the vicinity of the Project, including, but not limited to: (1) Native American resources, burial sites, and artifacts; and (2) historical mining operations and related artifacts.

Visual Resources

- Visual impacts to wilderness areas; increased light pollution on desert night sky
- Avoid impacts affecting visually sensitive areas
- Analyze the project's aesthetic and visual impacts that could affect desert star gazing and Native American practices

Land Use/Special Designations (ACECs, WAs, WSAs, etc.)

- Applicant implies that biological resources within project area are not sensitive because not located within Areas of Critical Concern (ACEC) or Desert Wildlife Management Area (DWMA), but many areas outside such designated areas do contain significant biological resources
- Use private land not public lands
- Describe reasonably foreseeable future land use and associated impacts resulting from additional power supply

Public Health and Safety

- Evaluate the effects of valley fever from disturbed soils.
- Describe the HTF, potential remediation if spilled, remediation plans and offsite disposal

Noise/Vibration

- Consider wildlife as sensitive receptors
- Dry cooling process noise/vibration impacts on wildlife

Recreation (RMAs, facilities, LTVAs, dispersed recreation opportunities, etc.)

- Evaluation should include impacts regarding OHV use, camping, photography, hiking, wildlife viewing, and rock hounding.
- Evaluation should include number of users, value of affected land for recreational purposes, and need to locate and acquire replacement venues for lands lost
- Indirect impacts caused by displacing recreational users
- Cumulative loss of land available for OHV recreation

Social and Economic Setting

- Evaluation of economic impacts due to construction, implementation, and operation.
- Economic impacts regarding loss of commerce due to recreational use losses.

Environmental Justice (minority and low-income communities)

- Evaluation whether diminished recreational access would be placed disproportionately on minorities and low-income communities.

Cumulative Impacts

- Identify impacts from other projects occurring in the vicinity, including solar, wind, geothermal, roads, transit, housing, OHV use, military maneuvers, and other development
- Include reasonably foreseeable projects; include all the solar and wind applications within vicinity of Ridgecrest
- Identify cumulative impacts of the addition of numerous renewable energy projects on the desert
- Include discussion of cumulative impacts to ground water supply
- Analyze the potential for development and population growth to occur in those areas that receive the generated electricity
- Describe the reasonably foreseeable future land use and associated impacts that will result from the additional power supply; i.e., recreation, grazing, OHV.
- Examine the potential for ecosystem fragmentation associated with the cumulative effects of large-scale industrial development occurring in the California Desert areas
- Analyze the project's cumulative impacts affecting biological resources
- The cumulative impacts analysis should address species migration needs and other ecological processes that maybe caused by global climate change

B. Alternative Development and/or Alternative Design Criteria

Comments in this category will be considered in the development of alternatives or can be addressed through design criteria in the alternative descriptions.

- Project description should not be narrowly defined to rule out feasible alternatives
- Describe how each alternative was developed, how it addresses each project objective, and how it would be implemented
- The preferred alternative should consider conjunctive use of disturbed private land in combination with adjacent lower value federal land
- Consider reduced project size
- Alternatives should include: sites not under BLM jurisdiction such as fallowed alfalfa fields north of the city ;
- Alternatives should describe rationale used to determine whether impacts of an alternative are significant or not
- Local high winds in the valley will affect design and cooler temperatures at the site will likely require more energy to keep the HTF warm and fluid in the winter months
- Consider reconfiguration alternatives proposed by F&WS to minimize impacts to wildlife movement and sensitive biological resources and washes.
- Consider cost and efficiency of energy for different technologies
- Consider alternative technologies that require significantly less water
- Consider the no-action alternative

C. Issues or Concerns Outside the Scope of the EIS

Comments in this category are outside the scope of analysis and will not be addressed in the EIS. Rationale for considering these comments out-of-scope is included.

- Consider development wherein solar and wind is focused first on lands which have lower resource value due to fragmentation, type conversion, edge effects, and other factors
- Consider abandoning the “fast track” approach because it does not allow enough time for an adequate analysis of impacts affecting natural, historical and cultural resource on and around the project site

BLM’S DISCRETIONARY ACTIONS (FOR BLM AND NEPA PURPOSES ONLY)

BLM is required to process ROW applications and to make a decision to either deny the ROW, grant the ROW as requested, or grant a modified ROW. It is a discretionary decision to grant a ROW or a modified ROW.

BLM'S PREFERRED ALTERNATIVE (FOR BLM AND NEPA PURPOSES ONLY)

BLM's objective in selecting a preferred alternative is to meet the purpose and need of the project, including the proposed project generating capacity, while appropriately mitigating environmental impacts. Currently, BLM has identified the February 2, 2010 amended application as the preferred alternative because it avoids El Paso Wash, the surrounding floodplain, and related high quality habitat. This reduces impacts to Mohave ground squirrel habitat compared with the original proposed project. The preferred alternative incorporates avoidance minimization measures and meets BLM's purpose and need to make a decision about the ROW application, while also allowing the development of 250 MW of renewable energy. Section 211 of the Energy Policy Act of 2005 mandates that up to 10,000 MW of non-hydropower renewable energy projects be approved on public lands by 2015. The preferred alternative's impacts to biological resources requires further review. As BLM and CEC continue their joint review, analysis of both public and agency comment will be considered in the selection of the final preferred alternative that will be presented in the SSA/FEIS. A Notice of Availability (NOA) of the FEIS will be published in the Federal Register when the FEIS is completed; the BLM will issue a Record of Decision (ROD) no earlier than 30 days after the FEIS is published.

The environmentally preferred alternative is the no action alternative. This alternative would not allow the development of renewable energy and would not have impacts on resources. However, it also would not provide the positive impacts of developing renewable energy related to climate change and global warming.

SUMMARY OF ENVIRONMENTAL IMPACTS AND RELATED MITIGATION (FOR ENERGY COMMISSION AND CEQA PURPOSES ONLY)

With the exception of the technical areas identified below, CEC staff believes that as currently proposed, including the applicant's and the staff's proposed mitigation measures incorporated into staff's proposed conditions of certification, the proposed RSP would comply with all applicable laws, ordinances, regulations, and standards (LORS).

For a more detailed review of potential impacts and LORS conformance, see staff's technical analyses in each chapter of the SA/DPA/DEIS. The status of each technical area is summarized in **Executive Summary Table 1** below and the subsequent text.

Executive Summary Table 1

Technical Area	Complies with LORS	Impacts Mitigated
Air Quality	Yes	Yes
<i>Biological Resources</i>	<i>No</i>	<i>No</i>
Cultural Resources	Yes	Yes
Efficiency	Yes	Yes
Facility Design	Yes	Yes
Geology & Paleontology	Yes	Yes
Hazardous Materials	Yes	Yes
Land Use	Yes	Yes
Noise and Vibration	Yes	Yes
Public Health	Yes	Yes
Reliability	Yes	Yes
Socioeconomic Resources	Yes	Yes
Soil & Water Resources	Yes	Yes
Traffic & Transportation	Yes	Yes
Transmission Line Safety/Nuisance	Yes	Yes
<i>Transmission System Engineering</i>	<i>Undetermined</i>	<i>Undetermined</i>
<i>Visual Resources</i>	Yes	<i>No</i>
Waste Management	Yes	Yes
Worker Safety and Fire Protection	Yes	Yes

ENERGY COMMISSION STAFF'S CONCLUSIONS (FOR ENERGY COMMISSION AND CEQA PURPOSES ONLY)

Biological Resources

Energy Commission biological resources staff believe the Ridgecrest Solar Power Plant (RSPP) is proposed to be constructed on land featuring unique habitat for sensitive species and biological resources. The project site supports one of the highest concentrations of desert tortoise (DT) in the western United States and represents an important geographic area which supports connectivity and genetic linkage between populations of endangered Mohave ground squirrel (MGS). The unique qualities of the site that support high concentrations of DT and MGS genetic linkage are irreplaceable and cannot be fully mitigated. Because construction of the project would permanently destroy this important biological resource, staff, based on an extensive analysis of the

project, cannot recommend that the RSPP be approved. Staff believes this site should be protected because of its importance to the DT population and its unique and critical benefits to the MGS.

Despite staff's conclusions regarding the site specific biological resources, in the event the Commission approves the project, staff has included a number of Conditions of Certification in an effort to maximize preservations of biological resources. Staff does not believe these measures are sufficient to fully mitigate the significant impacts to the project site under CEQA, but the conditions will provide the fullest practicable mitigation.

Transmission System Engineering

Generally staff relies on the California ISO Phase I /System Impact Study to determine whether or not the proposed generation project will likely comply with reliability and to identify the transmission facilities required for reliable interconnection. Due to the number of generators that have chosen not to participate in the Phase II study, the Transition Cluster projects the Phase I Study previously analyzed, no longer provides an accurate forecast of impacts of the RSPP on the SCE transmission grid. Therefore, the transmission upgrades identified in the Phase I Study are not reasonably foreseeable consequences of the proposed generating project. Relying on available information, staff is unable to identify any likely indirect project transmission impacts. Upon completion of the Phase II Study and the execution of the LGIA, the impacts of the RSPP on grid reliability will be identified. In order to ensure compliance with reliability LORS, Condition of Certification TSE-5 requires the submittal of the Phase II Study and the executed LGIA prior to the start of construction of transmission facilities.

Visual Resources

Energy Commission visual resources staff have analyzed visual resource-related information pertaining to the proposed Solar Millennium Ridgecrest Solar Power Project (RSPP) and conclude that the proposed project would result in a substantial adverse impact to existing scenic resource values as seen from several viewing areas and Key Observation Points in the project vicinity including:

- U.S. 395 in the vicinity of, and on approach to, the project area;
- Brown Road in the vicinity of, and on approach to, the project area;
- Various BLM recreational access roads in the vicinity of the project area;
- Nearby residences;
- The Railroad Bed Bike Trail in the vicinity of the project area; and
- The elevated hill immediately west of the south development area.

Energy Commission staff concludes that these visual impacts would be significant in terms of three of the four criteria of California Environmental Quality Act (CEQA) Appendix G, and could not be mitigated to less than significant levels and would thus result in significant and unavoidable impacts under CEQA.

If the Energy Commission approves the project, Energy Commission staff recommends that all of the Energy Commission staff's proposed conditions of certification be adopted

in order to minimize impacts to the greatest extent feasible. Conditions of certification referred to herein serve the purpose of both the Energy Commission's conditions of certification for purposes of CEQA and BLM's Mitigation Measures for purposes of the National Environmental Policy Act (NEPA).

For the other technical areas, except for Visual Resources, staff finds that incorporation of the recommended Conditions of Certification would mitigate all significant impacts to less than significant levels.

REFERENCES

CEC 2010s - California Energy Commission/Public Advisers Office (tn 55905). Public Adviser's Event Advertising Form. Submitted to CEC/Docket Unit on 3/16/2010

CEC 2009i - California Energy Commission/T.O Brien (tn 54327). Notice of Public Workshop, dated 11/30/2009. Submitted to CEC/Docket Unit on 12/2/2009.

CEC 2009j - California Energy Commission/J. Boyd (tn 54344). Notice of Energy Commission Information Hearing Environmental Scoping Meeting, dated 12/3/2009. Submitted to CEC/Docket Unit on 12/3/2009.

CEC 2009n - California Energy Commission/T. O'Brien (tn 54626). Supplemental Notice of Public Workshops, dated 12/29/2009. Submitted to CEC/Docket Unit on 12/30/2009.

A. INTRODUCTION

Eric K. Solorio

A.1 PERMITTING AGENCIES AUTHORITIES, RESPONSIBILITIES AND PROCESSES

The California Energy Commission (CEC) and the Bureau of Land Management (BLM) have prepared this joint, detailed analysis and statement known as a Staff Assessment/Draft Plan Amendment/Draft Environmental Impact Statement (SA/DPA/DEIS). The Draft Plan Amendment pertains to the BLM's California Desert Conservation Area Plan of 1980 as Amended. The analysis and statement are commonly referred to as a "joint, environmental document" because the SA/DPA/DEIS addresses the requirements of the California Environmental Quality Act (CEQA) and also the National Environmental Policy Act (NEPA). CEQA is a statute that requires state (CEC) and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible. NEPA requires federal agencies (BLM) to integrate environmental values into their decision making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions.

For clarity, staff emphasizes to the reader that this "joint, environmental document", is being used by the CEC and also the BLM, in separate and distinctly different licensing, permitting and or authorization processes. Overall, both the BLM and the CEC will rely on the SA/DPA/DEIS document in very similar ways (i.e. considering the proposed project's impacts on the environment).

Because the BLM and the CEC, respectively, will each rely upon this document to comply with different environmental regulations, there are certain portions of the document titled "CEQA purposes only" or "NEPA purposes only" or use other similar language. The CEQA only portions are identified for the benefit of the CEC's environmental review process while the NEPA only portions are identified for the benefit of the BLM's environmental review process. The balance of the document is for the benefit of both agencies respective, environmental reviews.

The authors of this SA/DPA/DEIS are CEC staff, hereafter referred to as "staff". Prior to drafting the joint document, the BLM and the CEC conducted multiple site visits, in order to examine the physical characteristics of the proposed project site. Both agencies also conducted joint review of the AFC, POD and related information regarding the proposed project. The BLM and the CEC also organized, noticed and held five public meetings and workshops to discuss the proposed project. The BLM has also reviewed the administrative draft of the SA/DPA/DEIS and provided written comments to the authors for incorporation into the SA/DPA/DEIS.

A.1.1 ENERGY COMMISSION'S AUTHORITY AND RESPONSIBILITIES

The Energy Commission has the authority to certify the construction, modification, and operation of thermal electric power plants 50 megawatts (MW) or larger. The Energy Commission certification is in lieu of any permit required by state, regional, or local

agencies; and federal agencies to the extent permitted by federal law (Pub. Resources Code, § 25500). The Energy Commission must review thermal power plant Applications for Certification (AFC) to assess potential environmental impacts including potential impacts to public health and safety, potential measures to mitigate those impacts, and compliance with applicable governmental laws or standards (Pub. Resources Code, § 25519 and § 25523(d)).

The Energy Commission's siting regulations require staff to independently review the AFC and assess whether all of the potential environmental impacts have been properly identified, and whether additional mitigation or other more effective mitigation measures are necessary, feasible, and available (Cal. Code Regs., tit. 20, § 1742 and § 1742.5(a)).

In addition, staff must assess the completeness and adequacy of the measures proposed by the applicant to ensure compliance with health and safety standards, and the reliability of power plant operations (Cal. Code Regs., tit. 20, § 1743(b)). Staff is required to develop a compliance plan to ensure that applicable laws, ordinances, regulations, and standards (LORS) are met (Cal. Code Regs., tit. 20, § 1744(b)).

Staff conducts its environmental analysis in accordance with the requirements of CEQA. No additional environmental impact report (EIR) is required because the Energy Commission's site certification program and production of a Staff Assessment (SA), has been certified by the California Resources Agency as meeting all requirements of a certified regulatory program (Pub. Resources Code, § 21080.5 and Cal. Code Regs., tit. 14, § 15251 (j)). The Energy Commission is the CEQA lead agency.

A.1.2. ENERGY COMMISSION'S SITE CERTIFICATION PROCESS

Upon the Energy Commission receiving a complete Application for Certification (AFC), Commission staff begins preparing an SA. The analyses contained in a SA are based upon information from the: 1) AFC, 2) responses to data requests, 3) supplementary information from local, state, and federal agencies, interested organizations, and individuals, 4) existing documents and publications, 5) independent research, and 6) comments received at public workshops. The analyses for most technical areas include discussions of proposed conditions of certification. Each proposed condition of certification is followed by a proposed means of verification that the condition of certification has been met. The SA presents staff's conclusions about potential environmental impacts and conformity with LORS, as well as proposed conditions that apply to the design, construction, operation, and closure of the facility.

Upon completion of the SA, it is published and made available to the applicant, interveners, public, agencies and interested parties. Following publication of the SA, staff provides a public comment period to resolve issues between the parties and to narrow the scope of disputed issues that would likely be presented at evidentiary hearings held by the Energy Commission. During the comment period, staff will conduct additional public workshops to discuss its conclusions, proposed mitigation, and proposed compliance-monitoring requirements. Based on dialogue at the workshops and written comments from agencies and the general public, staff may choose to refine its analysis, correct minor errors, and or finalize conditions of certification to reflect

areas where agreements have been reached with the parties. If necessary, staff will then publish an Errata to the Staff Assessment which corrects any minor errors in the SA, elaborates on any details to proposed mitigation measures and addresses the comments received. When producing a joint environmental document, staff will publish its Errata simultaneously with and as part of the Final Environmental Impact Statement. The final document for this review will be titled Staff Assessment; Errata/Proposed Plan Amendment/Final Environmental Impact Statement (SAE/PPA/FEIS).

For the Energy Commission's purposes in considering the RSPP, the SAE/PPA/FEIS is not the decision document for the Commission's proceedings nor does it contain "findings" of the Energy Commission related to environmental impacts or the project's compliance with local/state/federal legal requirements. The SAE/PPA/FEIS will be entered into the evidentiary record and serve as Energy Commission staff's testimony in evidentiary hearings to be held by the Committee of two Commissioners along with a hearing officer, who are overseeing this case. The Committee will hold evidentiary hearings and will consider all the evidence entered into the record including evidence presented by staff, the applicant, all parties, government agencies and public comments, prior to proposing its decision. At the public hearings, all parties will be afforded an opportunity to present evidence and to rebut the testimony of other parties, thereby creating a hearing record on which a decision on the project can be based. The hearing before the Committee also allows all parties to argue their positions on disputed matters, if any, and it provides a forum for the Committee to receive comments from the public and other governmental agencies. It is important to distinguish that the Commission's hearing process is completely separate from the BLM's process. As such, evidence presented at the Commission's hearings is not evidence, facts or findings that is before the BLM.

Following the evidentiary hearings, the Committee's recommendation to the full Energy Commission on whether or not to approve, modify or deny the proposed project will be contained in a document entitled the Presiding Member's Proposed Decision (PMPD). Following publication, the PMPD is circulated for 30 days, in order to receive written public and agency comments. At the conclusion of the comment period, the Committee may prepare a revised PMPD. The final step is presentation of the PMPD by the hearing officer to the full Commission for consideration and issuance of an order granting or denying of a license to construct and operate the proposed facility.

A.1.3 BUREAU OF LAND MANAGEMENT'S AUTHORITY, RESPONSIBILITIES, AND PURPOSE AND NEED

A.1.3.1 Bureau Of Land Management's Authority and Responsibilities

Applications to construct and operate commercial solar energy facilities on public lands, managed by the BLM, are processed as right-of-way (ROW) authorizations under Title V of the Federal Land Policy and Management Act (FLPMA) of 1976 [43 United States Code (U.S.C.) 1701 et seq.], and Title 43, Part 2804 of the Code of Federal Regulations (CFR). Applications submitted to the BLM for commercial solar energy development projects use Form SF-299. Additional authorities consistent with BLM for processing such applications (SF-299), include the following:

- The Energy Policy Act of 2005 (Epact), which says "It is the sense of Congress that the Secretary of the Interior should, before the end of the 10-year period beginning on the date of enactment of this Act [August 8, 2005] seek to have approved non-hydropower renewable energy projects located on the public lands with a generation capacity of at least 10,000 megawatts of electricity."; and
- Secretarial Order 3285, dated March 11, 2009, which "establishes the development of renewable energy as a priority for the Department of the Interior".

In processing the ROW applications and considering taking related actions to change land use designations, the BLM is required under the NEPA to conduct a comprehensive environmental review of the proposed project. For the RSPP, this NEPA review will be documented in the form of an SA/DPA/DEIS and a subsequent SAE/PPA/FEIS.

A.1.3.2 BLM Land Use Plan Conformance

The principal land use plan affecting this proposed project is the U.S. Bureau of Land Management's (BLM) California Desert Conservation Area (CDCA) Plan of 1980, as amended, and the West Mojave Desert Management Plan (WEMO), which amends the CDCA Plan for those specific areas of the Mojave Desert. In the CDCA Plan, the location of the proposed facility includes land that is unclassified and small amount of classified as Multiple-Use Class L (Limited Use). The Plan states that solar power facilities may be allowed within Limited Use areas after the NEPA requirements are met by considering the environmental impacts and reasonable alternatives to the action. The majority of the Project is located in unclassified BLM-administered land. The BLM manages these parcels on a case-by-case basis.

This DEIS acts as the mechanism for complying with those NEPA requirements. Because solar power facilities are an allowable use of the land as it is classified in the CDCA Plan, the proposed action does not conflict with the Plan. However, Chapter 3, "Energy Production and Utility Corridors Element" of the Plan states that "Sites associated with power generation or transmission not identified in the Plan will be considered through the Plan Amendment process." Because the proposed facility is not currently identified within the CDCA Plan, the plan would require an amendment to authorize the proposed project.

As specified in Chapter 7, Plan Amendment Process, there are three categories of Plan Amendments, including:

- Category 1, for proposed changes that will not result in significant environmental impact or analysis through an Environmental Impact Statement;
- Category 2, for proposed changes that would require a significant change in the location or extent of a multiple-use class designation; and
- Category 3, to accommodate a request for a specific use or activity that will require analysis beyond the Plan Amendment Decision.

Based on these criteria, approval of the proposed project would require a Category 3 amendment.

The Implementation section of the Energy Production and Utility Corridors Element of the CDCA Plan lists a number of Category 3 amendments that have been approved since adoption of the Plan in 1980. An additional amendment is proposed to be added to this section of the Plan, and would read “Permission granted to construct solar energy facility (proposed Ridgecrest Solar Power Project (RSPP).” a.1.3.3 Bureau of Land Management’s right-of-way grant process.

Under federal law, the BLM is responsible for processing requests for rights-of-way to construct systems for generation, transmission, and distribution of electric energy on the public lands. In response to Solar Millennium’s application for a ROW grant (CACA 049016) on public land together with a Plan of Development (POD) to develop the RSPP, the BLM and CEC generated this SA/DPA/DEIS to evaluate the potential environmental impacts of the proposed action, the No Action alternative, and other alternative actions that may meet BLM’s purpose and need. The following outlines the BLM’s public comment timing and process:

1. The Notice of Availability (NOA) publication in the Federal Register will begin the 90-day public comment period on the SA/DPA/DEIS
2. Following completion of the comment period, BLM will review and develop responses to comments that were submitted by the public and other agencies. The responses to the comments will be incorporated into a joint SAE/PPA/FEIS, which will also include identifying the BLM’s preferred project alternative. A Notice of Availability (NOA) of the joint SAE/PPA/FEIS will be published in the Federal Register when the SAE/PPA/FEIS becomes available for public review.
3. The SAE/PPA/FEIS will be available for public review for 30-days before the BLM issues a Record of Decision (ROD). The Decision is appealable to the Interior Board of Land Appeals upon issuance of the ROD.

A.1.3.4 BLM’s Purpose and Need for the Proposed action

NEPA guidance published by the Council on Environmental Quality (CEQ) states that environmental impact statements’ Purpose and Need section “shall briefly specify the underlying purpose and need to which the agency is responding in proposing the

alternatives including the proposed action” (40 CFR §1502.13). The following discussion sets forth the purpose of, and need for, the project as required under NEPA.

Solar Millennium, LLC, has submitted an amended application to apply for a ROW authorization to construct and operate a parabolic trough, solar thermal, generating facility with a capacity of 250 megawatts. The project would connect to the existing Southern California Edison 230-kilovolt (kV) Inyokern/Kramer Junction transmission line. About a mile and half long portion of this 230 kV transmission line and about a mile and a half long portion of a 115 kV line would be realigned to avoid the project area. The amended application requests an approximately 3,995-acre ROW that would contain two solar fields, a power block, construction areas, a dry-cooling tower, steel transmission towers with associated transmission lines, access roads, three covered water tanks, an underground water pipeline, a water treatment facility, an electrical switchyard, a land treatment unit for bioremediation of any soil that may be contaminated by heat transfer fluid, an office, a warehouse, a parking lot, and facility perimeter fencing. The application is for a project that would be located approximately five miles southwest of the city of Ridgecrest in Kern County, California.

The BLM’s purpose and need is to respond to Solar Millennium, LLC’s application will be consistent under FLPMA for a ROW grant to construct, operate and decommission a solar generation facility and associated infrastructure in compliance with FLPMA, BLM ROW regulations, and other applicable federal laws. BLM’s review of Solar Millennium, LLC’s application is also consistent with the following laws and directives pertaining to renewable energy resources:

- Section 211 of the Energy Policy Act of 2005, enacted in August 2005 states, “It is the sense of Congress that the Secretary of the Interior should, before the end of the 10-year period beginning on the date of enactment of this Act [August 8, 2005] seek to have approved non-hydropower renewable energy projects located on the public lands with a generation capacity of at least 10,000 megawatts of electricity.” Instruction Memorandum 2007-097, dated April 4, 2007, Solar Energy Development Policy establishes BLM policy to ensure the timely and efficient processing of energy ROWs for solar power on the public lands.
- Secretarial Order 3283 Enhancing Renewable Energy Development on the Public Lands signed January 16, 2009. This order facilitates the Department of the Interior’s efforts to achieve the goals established in Sec. 211 of the Energy Policy Act of 2005.
- Secretarial Order 3285 Renewable Energy Development by the Department of the Interior, signed March 11, 2009. The order establishes the development of renewable energy as a priority for the Department of the Interior and establishes a Departmental Task Force on Energy and Climate Change.

The decision BLM makes is whether or not to grant a ROW and if so, under what terms and conditions, and whether to amend the CDCA land use plan. The SA/DPA/DEIS will be used to analyze the impacts of these decisions.

Modifying the existing route network is a part of the purpose and need for this project. The purpose and need for this project also includes compliance with 43 CFR 8342.1

which establishes criteria to consider when making route designations. The designations should be based on the protection of the resources of the public lands, promotion of the safety of the users of the public land, and to minimize the conflicts among the various users of the public lands. They also must be in accordance with the following criteria:

- Areas and trails shall be located to minimize the damage to soil, watershed, vegetation, air, or other resources of the public lands, and to prevent impairment of wilderness suitability.
- Areas and trails shall be located to minimize harassment of wildlife or significant disruption of wildlife or significant disruption of wildlife habitats. Special attention would be given to protect endangered or threatened species and their habitats.
- Areas and trails shall be located to minimize conflict between OHV use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors.
- Areas and trails would not be located in officially designated wilderness areas or primitive areas. Areas and trails would be located in natural areas only if the authorized officer determines that vehicle use in such locations would not adversely affect their natural, esthetic, scenic, or other values for which such areas are established.

A.1.4 BLM STATUTORY SECTIONS

This section discusses the following topics that are required to be addressed by environmental impact statements and reports by federal and/or California statutes, regulations, or policy:

- Relationship Between Short-Term Uses of the Environment and the Maintenance and
- Enhancement of Long-term Productivity
- Irreversible and Irretrievable Commitment of Resources
- Growth-Inducing Effects of the Proposed Action
- Energy Consumption and Conservation

A.1.4.1 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Consideration of energy development permits on BLM managed lands is a trade-off between a permitted short-term use of the desert environment in exchange for other uses, including conservation and habitat uses that would be effective in the longer term.

In the short term, the development alternatives allow commercial energy generation use of desert lands. New disturbance would occur on the development land. This use is incompatible with habitat conservation on the same land.

In the long term, despite these uses, the previous establishment of a habitat conservation area, including tortoise DWMA's and other conservation areas, would ensure that desert ecosystems would be maintained and enhanced with nearly 98 percent of the 2.2 million acre WEMO planning area maintained in an undisturbed condition. Additionally, an acquisition program to acquire and enhance the protection of private lands would be established with the required mitigation.

Closure of off highway vehicle routes through the project area, will be off-set by creation of alternate routes around the project area to allow appropriate access to sites visited by the public. These new routes would be maintained, however, thus minimizing losses of recreation and commercial access. This would be accomplished by the design of a network that provided appropriate access in a manner that avoided sensitive resource sites. Access would continue to be provided for a variety of activities, including equestrian staging areas, recreational touring, rock hounding, mineral exploration, and other legitimate uses.

At the end of the term of the right of way, the land would be reclaimed and returned to its prior condition and use, returning to long term productivity.

A.1.4.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Authorized take of habitat would result in the permanent loss of wildlife and plant habitat. Once new ground disturbance occurs, the natural habitat eliminated by this would no longer be available to sensitive wildlife and plant species. This could include desert tortoise habitat. Direct take of individuals could also occur. Given the large scale of the conservation areas on other BLM managed lands, these disturbances are not likely to threaten the survival and recovery of sensitive species. Designation of conservation areas and previous closure of routes within those areas enhanced ecosystem conservation for the land within the West Mojave Plan.

All undertakings that involve ground disturbing activities would require site-specific cultural analysis that may include surveys, recording of historic and prehistoric sites, and determinations of eligibility of sites to the National Register of Historic Places. Potential impacts to Native American values would be analyzed. Mitigation measures would be identified and implemented if necessary. Avoidance of impacts to cultural resources is the preferred mitigation measure, but is not always possible or feasible. A decision to mitigate impacts to cultural resources by data recovery, instead of avoidance and consequent removal of cultural resources from the area constitutes a residual impact to the site. Sites would rarely, if ever, be completely excavated. Mitigation by data recovery results in a steady loss of archaeological sites, and reduces opportunities for interpretation in their natural context.

Parts of allotments no longer available for grazing use would be lost for the reasonably foreseeable future. The amount of land removed from the allotment would not result in a loss of livestock production.

In processing the application for this renewable energy project, BLM has made no irreversible or irretrievable commitment of resources.

A.1.4.3 GROWTH-INDUCING EFFECTS OF THE PROPOSED

ACTION

Population growth in the West Mojave is projected to range between 1.59% and 2.21% per year for the 30-year term of the project. Adoption of streamlined procedures for complying with the California and federal endangered species acts increases the likelihood that growth rates will approximate the latter figure. This is based upon the assumption that applicants for discretionary development permits will have a higher incentive to pursue high desert projects due to the reduction and/or elimination of costs associated with obtaining those permits, and (more significantly) the elimination of delays currently inherent in the permit approval process. This growth would be focused in the vicinity of currently urbanized areas, including incorporated cities, rather than in more remote desert regions.

This individual project is not expected to have a significant growth-inducing effect on the development of BLM-administered public lands. As more energy development projects are authorized the State of California and the United States will be closer to meeting their renewable energy goals and thus reducing the demand for future projects.

A.1.4.4 ENERGY CONSUMPTION AND CONSERVATION

Any development project would result in a direct change to the regional level of energy development and a minimal change to the regional level of energy conservation and consumption.

A.1.5 U.S. DEPARTMENT OF ENERGY (DOE), LOAN GUARANTEE PROGRAM (LGP) OFFICE'S PURPOSE AND NEED STATEMENT

Solar Millennium has also applied to the United States (US) Department of Energy (DOE) for a loan guarantee pursuant to Title XVII of the EAct. Title XVII of EAct authorizes the United States Secretary of Energy to make loan guarantees for a variety of types of projects, including those that "avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases, and employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued." The two principal goals of the loan guarantee program are to encourage commercial use in the United States of new or significantly improved energy-related technologies and to achieve substantial environmental benefits. The purpose and need for action by DOE is to comply with their mandate under EAct by selecting eligible projects that meet the goals of the Act.

Should DOE enter into negotiation of a possible loan guarantee with the applicant, DOE would become a cooperating agency in developing the FEIS. The need includes consideration for this or other funding available through the DOE. Should DOE accept the application as suitable for this funding, DOE may adopt this EIS, or become a cooperating agency in developing the FEIS. If so, this SA/FEIS may be used by DOE to meet the NEPA requirements in making a determination of funding.

A.1.6 U.S. FISH AND WILDLIFE SERVICE'S AUTHORITY AND RESPONSIBILITIES

The U.S. Fish and Wildlife Service (USFWS) is charged with protection of threatened and endangered species under the Federal Endangered Species Act (ESA), 16 U.S.C. 1531. ESA requires federal agencies to consult with the USFWS or the National Oceanic and Atmospheric Administration (NOAA) when a federal action is likely to adversely affect listed species or critical habitat. Consultation is initiated by the lead federal agency (BLM) through the preparation and submission a Biological Assessment (BA) to USFWS/NOAA which describes the proposed project, its effects on the specie(s) and its habitat, and related avoidance and minimization measures.

Upon receipt of the BA, the USFWS/NOAA will begin formal consultation with the BLM to discuss the proposed action. Following consultation, the USFWS/NOAA will then issue a Biological Opinion (BO). The BO may find the BLM's proposed action will result in "jeopardy" to the listed species, as a whole. If so then the proposed action cannot be taken. Alternatively, if the USFWS/NOAA concludes the proposed action will not result in "jeopardy" to the listed species, as a whole, then the BO will authorize the "incidental take" of the listed species¹, and contain specific avoidance and minimization measures which must be implemented if the proposed action is approved by the BLM. The BO must be obtained from the USFWS and considered by the BLM, before the BLM issues a Record of Decision.

A.1.7 KERN COUNTY AIR POLLUTION CONTROL DISTRICT'S AUTHORITY AND RESPONSIBILITIES

The project site is located in the Mojave Desert Air Basin² and is under the jurisdiction of the Kern County Air Pollution Control District (KCAPCD). Based upon the authorities in 40 Code of Federal Regulations (CFR) Part 52 and 40 CFR Part 60, the District is responsible for issuing the federal New Source Review (NSR) permit and has been delegated enforcement of the applicable New Source Performance Standard (Subpart IIII).

A.1.8 CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS)

Caltrans has jurisdiction over encroachments to its transportation facilities and related easements and rights-of way. Regarding the proposed RSPP, CalTrans has authority to consider granting an encroachment permit for the RSPP to cross under US Route 395 with a water line, and also granting a right-of-way and related encroachment permit for a potential new access from US Route 395 to the project site.

¹ The BO would not authorize take of listed plant species. For purposes of this document the BO would potentially authorize the incidental take of the Desert Tortoise.

² The Mojave Desert Air Basin lies inland east of the San Joaquin Valley Air Basin to the west and north and east of the South Coast Air Basin. The desert portions of Kern, San Bernardino, Riverside, and Los Angeles counties are within its boundaries.

A.1.9 KERN COUNTY, CALIFORNIA

The county of Kern has jurisdiction to issue building permits to the RSPP. Building permits issued by the county are considered ministerial, in nature. The county also has jurisdiction to issue discretionary approvals for any easements, rights-of-way and or encroachment permits where county facilities are concerned.

A.2 ORGANIZATION OF THE STAFF ASSESSMENT/ DRAFT PLAN AMENDMENT/DRAFT ENVIRONMENTAL IMPACT STATEMENT (SA/DPA/DEIS)

The SA/DPA/DEIS contains an Executive Summary, Introduction, Project Description, and Project Alternatives. The environmental, engineering, and public health and safety analysis of the proposed project is contained in a discussion of 20 technical areas. Each technical area is addressed in a separate chapter. These chapters are followed by a discussion of facility closure, project construction and operation compliance monitoring plans, and a list of CEC and BLM staff that assisted in preparing and reviewing this report.

Each of the 20 technical area assessments includes a discussion of:

- Laws, ordinances, regulations, and standards (LORS);
- The regional and site-specific setting;
- Project specific and cumulative impacts;
- Mitigation measures;
- Closure requirements;
- Conclusions and recommendations; and
- Conditions of certification for both construction and operation (if applicable).

B. THE PROPOSED PROJECT AND ALTERNATIVES

B.1 DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES

Testimony of Eric K. Solorio

B.1.1 INTRODUCTION

This section provides a description of the proposed project and three (3) project alternatives being considered¹ by the California Energy Commission (CEC) and the U.S. Bureau of Land Management (BLM). For purposes of describing the proposed project and the project alternatives, it is helpful to first articulate the differences between NEPA and CEQA, with respect to how each set of regulations evaluates the proposed project and project alternatives.

Under NEPA, both the proposed project **and** the project alternatives are each analyzed at the same level. Both the proposed project and the project alternatives are compared to; and considered alternatives to each other. As such, the proposed project and the project alternatives are hereafter referred to using the term “project” or “alternative”, interchangeably. A key distinction to be made under a CEQA analysis is that “project alternatives” are normally analyzed at a lesser degree than the proposed project, and alternatives are not evaluated as alternatives to each other, rather the primary comparison is as an alternative to the proposed project.

The common objective of both CEQA and NEPA is to identify the potential impacts on the human environment that would potentially arise if the proposed project is approved – and consider “alternatives” that could otherwise avoid and or minimize some or all of the effects. NEPA and CEQA, respectively, take a slightly different approach to considering alternatives to the proposed project however, both sets of environmental laws have the same overall objective – to inform the decision makers and the public of the environmental effects of a project and ways those effects could otherwise be avoided; minimized and or mitigated.

Because a review under NEPA treats the proposed project and the project alternatives equally, it is necessary herein to describe each project alternative to the same degree. The four alternatives described in this **Section B.1**, range in size from 104 megawatts (MW) up to 250 MW, and are generally identified below:

- Alternative #1: **Proposed Project** (250 MW sited on 1,944 acres)
- Alternative #2: **Northern Unit Only** (146 MW sited on 1,118 acres)
- Alternative #3: **Southern Unit Only** (104 MW sited on 809 acres)
- Alternative #4: **Original Proposed Project** (250 MW sited on 1,760 acres)

Please refer to **Project Description Figures 1, 2, 3 and 4** (at the end of this section) which illustrate the proposed project and each alternative. Although Alternatives #1 and

¹ The Energy Commission also considered additional alternatives that are discussed in **Section B.2** of this SA/DEIS document. The BLM also considered but eliminated other project alternatives, discussed in **Section B.2**. The Alternatives described in this **Section B.1** were both carried forward and fully analyzed by the Energy Commission and the Bureau of Land Management.

#4 are the same size (in rated capacity), Alternative #4 was evaluated because it has a different facility footprint; smaller disturbance area, would reduce impacts to the Mohave Ground Squirrel conservation area, and potentially reduce impacts to Desert Tortoise in the northern portion of the ROW. The remaining two alternatives (#2 and #3) are significantly smaller versions of the proposed project. Both alternatives #2 and #3 are being considered because of their independent ability to avoid site specific impacts to the Mohave Ground Squirrel, listed by the State of California, as threatened under California Endangered Species Act (CESA) and the Mojave Desert Tortoise which is federally listed as threatened under the Endangered Species Act of 1973, as amended 16 U.S.C. 1531.

All four of the project alternatives would potentially be sited somewhere within the 3,995-acres the applicant applied for under the February 2, 2010 amended SF-299 application. Each alternative would use the same solar electric technology and therefore have a common description of equipment, systems, processes, resource inputs, operations, closure plans and general location. As such, in order to avoid redundancy, subsection **B.1.2** will present a single, comprehensive project description that identifies the elements that are common to the proposed project and each alternative ("Project"). Following, subsection **B.1.3** will then identify any additional elements that are unique to each alternative. Lastly, there may be additional project features and characteristics, related to each alternative, as described in the various technical analyses that follow.

B.1.2 PROJECT DESCRIPTION COMMON TO ALL FOUR ALTERNATIVES

B.1.2.1 PROJECT(S) LOCATION AND VICINITY

Each of the four alternatives would be developed within the same 3,995-acre ROW area, currently managed by the BLM. The ROW area is located in north eastern Kern County, California, along U.S. Highway 395, just west of the China Lake Boulevard exit. The outer boundary of the ROW area is approximately five miles southwest of the city of Ridgecrest, California. Ridgecrest is at the southwestern boundary of the China Lake Naval Air Weapons Station (NAWS).

B.1.2.2 PROPERTY DESCRIPTION

The ROW area consists entirely of Federal land, described as within sections 13, 14, 23-27, 34 and 35, Township 27 South, Range 39 East and section 2, Township 28 South, Range 39 East, San Bernardino Base and Meridian, Kern County, California. If any of the four alternatives were authorized, the difference between the total 3,995 acres listed in the amended SF-299 ROW application and the total acreage required for construction and operation would be reduced to the total disturbed area required for that particular project.

The following Kern County Assessor's Parcel Number's identify the parcels within the overall ROW boundary:

APN 341-091-08	APN 341-091-10	APN 341-091-11	APN 341-110-01
APN 341-110-02	APN 341-110-03	APN 341-110-05	APN 341-110-06

B.1.2.3 OVERVIEW OF A PARABOLIC TROUGH, POWER PLANT

The proposed project and alternatives would utilize solar parabolic trough technology to generate electricity. With this technology, arrays of parabolic mirrors collect heat energy from the sun and focus the solar radiation on a receiver tube located at the focal point of the parabola where the heat transfer fluid (HTF) is heated to temperatures of 750 degrees Fahrenheit, as it circulates through the receiver tubes. The HTF is then piped through a series of heat exchangers where it releases its stored heat to generate high pressure steam. The steam is then fed to a traditional steam turbine generator where electricity is produced.

The power block would be located north of Brown Road. The power block is composed of its own administration, control, warehouse, maintenance, and lab buildings; the HTF pumping and freeze protection system; solar steam generator (SSG); a propane fired auxiliary boiler; one steam turbine generator (STG); an air-cooled condenser (ACC); generator step-up (GSU) transformer, transmission lines and related electrical system; potable and treated water tanks; and auxiliary equipment (i.e., water treatment system, diesel-powered emergency generator, and firewater system).

In addition to the main power generating facility, there would be a main office building and parking lot, a main warehouse with laydown area, onsite access roads, a tie-in switchyard, and a land treatment unit (LTU) for bioremediation or land farming of HTF-contaminated soil.

The proposed project and alternatives would generate electric power solely via solar energy. Propane will be used to fire an auxiliary boiler overnight to support startup operations until the HTF system is up to operating temperature, at which time the generation of electricity can commence. A second fired heater will be used as needed, mostly during the winter, to prevent freezing of the HTF.

The proposed project and alternatives would require a 5-mile water pipeline from the Indian Wells Valley Water District (IWWVD) existing water tank and a 230-kilovolt (kV) gen-tie transmission line from the turbine generator to the onsite switchyard that will interconnect with Southern California Edison's (SCE) existing 230 kV InyoKern/Kramer Junction transmission line that currently crosses the southwestern portion of the ROW boundary.

B.1.2.4 SOLAR ELECTRIC GENERATING FACILITY DESCRIPTION

The following sections describe the processes, systems, and equipment that constitute the generation facilities. All plant facilities will be designed, constructed and operated in accordance with applicable laws, ordinances, regulations and standards (LORS). All

generating facilities would be located within the fence line of each of the proposed project and alternatives.

The plant will consist of a conventional steam Rankine-cycle power block, a parabolic trough solar field, an HTF and steam generation system, as well as a variety of ancillary facilities (sometimes referred to collectively as “balance-of-plant” [BOP]), such as conventional water treatment, electrical switchgear, administration, warehouse, and maintenance facilities, etc. The electric output of the plant will be provided entirely by solar energy. No electricity will be generated by the use of fossil fuel. A propane-fired HTF heater will be used for freeze protection of the HTF in the solar fields.

B.1.2.4.1 Major Facilities

Overall proposed project facilities include the following major components:

- Solar field(s),
- Access road from Brown Road to onsite office,
- Office and parking,
- LTU for bioremediation/land farming of HTF-contaminated soil,
- Warehouse/maintenance building and laydown area,
- Onsite transmission facilities including switchyard,
- Diversion channels to reroute desert washes,
- Water pipeline,
- SCE transmission corridor relocation area, and
- Power block,
 - SSG, including steam generation heat exchangers,
 - HTF expansion and overflow vessels,
 - One HTF freeze protection heat exchanger,
 - One auxiliary boiler,
 - One STG,
 - One GSU transformer,
 - ACC,
 - One small wet cooling tower for ancillary equipment (no evaporation pond),
 - Reverse osmosis (RO) concentrate/dust control water storage tank,
 - Potable water storage tank,
 - Treated water tank,
 - Water treatment system,
 - Operations and maintenance buildings, and
 - Transmission lines and communication lines exiting the power block.

B.1.2.4.2 Parabolic Trough, Solar Field(s)

The solar field will be a modular, distributed system of solar collector assemblies (SCAs) connected in a series-parallel arrangement via a system of insulated pipes. The collectors will be equipped with a sun tracking mechanism that moves the reflecting collectors toward the sun to the optimum angle for solar energy collection. The collectors will be aligned north-south to track the sun from east to west. HTF will flow from the HTF pumping area in the power block to the cold HTF header that distributes it to the collector loops of SCAs in the solar fields.

Parabolic Trough Collector Loop

Each of the collector loops consist of two adjacent rows of SCAs, each row about 1,300 feet long. The two rows are connected by a crossover pipe. HTF is heated in the loop and enters the hot header, which returns hot HTF from all loops to the power block where the power generating equipment is located.

Solar Collector Assemblies (SCA)

The SCAs will be oriented north-south to rotate east-west to track the sun as they move across the sky throughout the day. The SCAs collect heat by means of linear troughs of parabolic reflectors, which focus sunlight onto a straight line of Heat Collection Elements (HCEs) welded along the focus of the parabolic “trough.” The HCE is mounted on a mechanical support system that includes steel, pylons and bearings. Each SCA includes local measurement instrumentation, a hydraulic drive system, and a controller which independently tracks the sun to maintain mirror focus on the HCEs and protects the HCEs from overheating.

Mirrors

The parabolic mirrors to be used in the proposed project and alternatives are low-iron glass mirrors and are known to be one of the most reliable components in the SCAs. No long-term degradation of the mirrors has been observed, and older mirrors can be brought back to nearly full reflectivity with simple cleaning. Typical life spans of the reflective mirrors are expected to be 30 years or more. The HCEs of the solar plant are composed of a steel tube surrounded by an evacuated glass tube insulator. The steel tube has a coated surface, which enhances its heat transfer properties with a high absorptivity for direct solar radiation, accompanied by low emissivity. Glass to metal seals and metal bellows are incorporated into the HCE to ensure a vacuum-tight enclosure. The enclosure protects the coated surface and reduces heat losses by acting as an insulator.

The glass tube cylinder has anti-reflective coating on both the inner and outer surfaces to reduce reflective losses off the glass tube, thereby increasing the transmissivity. Usually, to maintain the tube’s insulating properties, getters, or scavengers, are installed in the vacuum space to absorb hydrogen and other gases that may permeate into the vacuum cylinder over time.

B.1.2.4.3 Heat Transfer Fluid (HTF) and System

The HTF is a synthetic hydrocarbon liquid mixture of diphenyl ether and biphenyl. Similar formulations are marketed by different manufacturers under the names of Therminol or Dowtherm.

The HTF is classified as a hazardous material by the State of California. It has a crystallizing (i.e., freezing) point of 12 degrees Celsius (°C) (about 54°F). Freeze protection is routinely accomplished by circulating HTF at a very low flow rate through the solar field using hot HTF from the vessel as a source. Performance model results indicate that the HTF heater may be required on very cold nights in the winter.

In addition to the HTF piping in the solar field, the HTF system includes three elements: 1) the HTF heater, 2) the HTF expansion and overflow vessels, and 3) the HTF ullage system. To eliminate the problem of HTF freezing, an HTF heater will be installed and used to ensure system temperature stays above 54°F whenever the unit is offline. An expansion vessel is required to accommodate the volumetric change that occurs when heating the HTF to the operating temperature.

During plant operation, HTF will degrade into components of high and low boilers (substances with high and low boiling points). The low boilers are removed from the process through the ullage system. HTF is removed from the HTF surge tank and flashed, leaving behind high boilers and residual HTF. The flashed vapors are condensed and collected in the ullage system.

A freeze protection system will be used to prevent freezing of the HTF piping systems during cooler winter nights. Since the HTF freezes at a relatively high temperature (54°F), HTF will be routinely circulated at low flow rates throughout the two solar fields using hot HTF from the storage vessel as a source. During winter, a fired HTF heater may be used when weather conditions dictate.

B.1.2.4.4 Propane-fired Auxiliary Boiler

A propane-fired auxiliary boiler with a capacity of 25,000 pounds per hour steam provides steam for maintaining steam cycle equipment vacuum over night and for startup. Sealing steam is used to prevent air from entering the steam turbine while the condenser is under vacuum. This method reduces startup time for the plant compared to relying on solar-generated steam as the sealing steam source. Unlike a gas-fired power plant, a solar thermal plant must wait for the sun to rise in the morning to start generating steam and has a finite time to generate electricity (i.e., the number of sunlight hours). If the plant does not have a secondary source of steam, plant startup is delayed (and thus total daily electrical generation reduced), while solar heat alone generates sealing steam and vacuum is established in the condenser.

Once the plant begins generating electricity for delivery to the electrical grid, the fired auxiliary boiler is no longer needed and is held in stand-by mode until auxiliary heat is again required after plant shutdown. The auxiliary boiler requires approximately 36.7 million British thermal units per hour (MMBtu/hr) of fuel at full load (design load is 34.4 MMBtu/hr).

B.1.2.4.5 Solar Steam Generator System

The SSG system transfers the sensible heat from the HTF to the feedwater. The steam generated in the SSG is piped to a Rankine-cycle reheat steam turbine. Heat exchangers are included as part of the SSG system to preheat and boil the condensate, superheat the steam, and reheat the steam.

B.1.2.4.6 Steam Turbine Generator

As described earlier, steam from the SSG is sent to the STG. The steam expands through the STG turbine blades to drive the steam turbine, which in turn drives the generator, converting mechanical energy to electrical energy. The proposed project's STG is expected to be a three-stage casing type with high pressure, intermediate pressure, and low pressure steam sections.

The STG is equipped with accessories required to provide efficient, safe, and reliable operation, including the following:

- Steam stop and control valves,
- Gland seal system,
- Lubricating and jacking oil systems,
- Thermal insulation, and
- Control instrumentation.

B.1.2.4.7 Transmission System Description

Southern California Edison's (SCE) owns and operates two existing transmission lines previously authorized by the BLM under ROW CARI-968 (The 230 kV, 100-foot width) and ROW CACA-021596 (the 115 kV, 40-foot width) that currently traverse the southwestern edge of the proposed project plant site and are proposed to be re-routed to avoid the solar fields and fences.. SCE applied with the BLM to amend the ROW's to accommodate this project. The amendment will be analyzed in this document. The amendment includes the relocation of the lines, switchyard, and distribution line and telecommunication system.

The proposed project or alternatives will be connected to the SCE transmission system by constructing a single-circuit three-phase onsite 230 kV gen-tie transmission line that will interconnect at a new switchyard located at the northwest corner to the southern solar field and south of Brown Road near The conductor proposed for the gen-tie is 795-thousand circular mils (kcmil) "Drake" conductor capable of carrying 907 amperes (A) at 75°C. SCE utilizes the nominal voltage of 230 kV. The use of 230 kV as the targeted design voltage in this application for certification (AFC) is consistent with the industry use of the 230 kV term to describe the nominal voltage for this class of system.

The circuit will be supported by mono-pole structures at appropriate intervals. The lines will be insulated from the poles using porcelain insulators engineered for safe and reliable operation at a maximum operating voltage of 253-kV (nominal, plus 10 percent). A shield wire will be included on the line to protect against lightning strikes. These pole designs were engineered to provide conceptual design limits for purposes of the electric

and magnetic field (EMF) studies. Final transmission structure design including tangent, angle, dead end, and pull-off structures and associated hardware will be determined during the final engineering of the proposed interconnection.

Transmission Line Route

The proposed gen-tie route, which connects SCE's transmission line to the switchyard is approximately one-mile long and proceeds south across Brown Road then directly west to the proposed 230-kV switchyard. The switchyard will be located due west of the power block and adjacent to the existing SCE transmission lines. Plant site construction will require the relocation of approximately 1 mile of existing overhead 115-kV and 230-kV transmission lines will be rerouted to the west of the southern solar field, resulting in new 1.7-mile rerouted segment. The new gen-tie line will exit a pull-off structure in the power block and head westerly along the south edge of the power block on monopole steel structures. The proposed 230-kV line will be designed to meet the requirements of California Public Utilities Commission General Order 95 (GO-95). During preliminary transmission line design, a conservative approach was taken in the pole design height in order to ensure ground clearance is in accordance with GO-95, but final design will be based on actual field conditions and site requirements.

Transmission Structures

The Project's monopole transmission structures are expected to average approximately 75 feet in height with a maximum height of 120 feet and an average span length of in the range of 400 to 800 feet. Access by vehicle will be required along the proposed Project transmission line route, a section of which crosses a new drainage ditch. Vehicle access for construction and regular operations between the power block and proposed switchyard will require new 15-foot wide unpaved roads.

B.1.2.4.8 Telecommunications and Telemetry

The Project will have telecommunications service from providers who serve the Ridgecrest area. Voice and data communications will be supported by a fiber optic system. This will be augmented with wireless telecom equipment, particularly to support communication with Solar Millennium's staff dispersed throughout the large Project site.

With respect to telemetry, the Project will utilize electronic systems to control equipment and facilities operations over a large site. While detailed information on Project use of the electronic spectrum has yet to be developed, because of the presence of various important Department of Defense (DoD) facilities/activities in the general area, e.g., China Lake NAWS and associated ranges, the project use of the electronic spectrum will not interfere with DoD activities; uses of the electronic spectrum.

B.1.2.4.9 Lighting System

The Project's lighting system will provide operations and maintenance personnel with illumination in normal and emergency conditions. AC lighting will be the primary form of illumination, but DC lighting will be included for activities or emergency egress required during an outage of the plant's AC system. AC convenience outlets will also be provided for portable lamps and tools. The lighting fixtures will be hooded to minimize night time glare in deference to the "dark skies" initiatives that strive to protect views of night skies.

The minimum illumination required to ensure safety and security objectives will be provided and will be oriented to minimize additional illumination in areas not pertinent to the facility.

B.1.2.4.10 Service Air and Instrument Air Systems

The service air system supplies compressed air to hose connections located at intervals throughout the power plant. Compressors deliver compressed air at a regulated pressure to the service air-piping network.

The instrument air system provides dry, filtered air to pneumatic operators and devices throughout the power plant. Air from the service air system is dried, filtered, and pressure regulated prior to delivery to the instrument air-piping network.

B.1.2.4.11 Project Civil/Structural Features

The following subsections describe civil/structural features of the Project. The power plant has been designed in conformance with Uniform Building Code (UBC) and California Building Code (CBC) criteria for Seismic Zone 4, the zone of highest seismic risk. The assumptions on structural and foundation designs outlined below are to be confirmed or modified as appropriate during the detailed design phase of the Project, with final design based on the results of the geotechnical investigation.

SSG System, STG and Associated Equipment

The SSG system, STG, and ACC will be located outdoors and supported on reinforced concrete mat foundations. The STG foundation will include a reinforced concrete pedestal. The GSU transformer will be supported on a reinforced concrete mat foundation. BOP mechanical and electrical equipment will be supported on individual reinforced concrete pads. BOP components/materials include piping, valves, cables, switches, etc., that are not included with major equipment and are generally installed or erected onsite.

Solar Collector Assembly Support Structures

Each SCA will be supported by structures (stands) that connect the parabolic troughs to the drive mechanism. Each array will be supported by multiple individual foundations with a foundation located approximately every 63 feet along the assembly. Foundation design will be based on site-specific geotechnical conditions to ensure that the SCA stands are able to support all loading conditions (including wind loading) at the Project site.

Buildings

The Project will include an office building and warehouse outside the power block. The power block will include a number of buildings including a control building, maintenance shop, water treatment lab, electrical building, and office building. The design and construction of the office building and warehouse will be consistent with normal building standards. Other plant site buildings will include the water treatment building, as well as a number of pre-engineered enclosures for mechanical and electrical equipment. Building columns will be supported on reinforced concrete mat foundations or individual

spread footings and the structures will rest on reinforced concrete slabs. The total footprint area of the buildings outside the power block is 122,000 square feet, and the footprint area of the buildings within the power block is approximately 31,200 square feet.

Water Storage Tanks

There will be three covered water tanks on site: one 1.5 million-gallon potable water storage tank, one 100,000-gallon RO concentrate/dust control storage tank, and one 600,000-gallon treated water storage tank. Water storage tanks will be vertical, cylindrical, field-erected steel tanks supported on foundations consisting of either a reinforced concrete mat or a reinforced concrete ring wall with an interior bearing layer of compacted sand supporting the tank bottom.

Roads, Fencing, and Security

Access to the plant site will vary for each alternative. Please refer to subsection **B.3** and **Project Description Figures 1, 2, 3 and 4** (at the end of this section) for specifics.

Only a small portion of the overall plant site will be paved, primarily the site access road to the main office and power block and portions of the power block (paved parking lot and roads encircling the STG and SSG areas). The remaining portions of the power block will be gravel surfaced. In total, the power block will be approximately 18 acres with approximately six acres of paved area. The solar field(s) will remain unpaved and without a gravel surface in order to prevent rock damage from mirror wash vehicle traffic; an approved dust suppression coating will be used on the dirt roadways within and around the solar field. Roads and parking areas located within the power block area and adjacent to the administration building and warehouse will be paved with asphalt.

The Project solar fields and support facilities perimeter will be secured with a combination of chain link and wind fencing. Chain link metal-fabric security fencing, 8 feet tall, with one-foot barbed wire or razor wire on top will be installed along the north and south sides of the facilities. Thirty-foot tall wind fencing, composed of A-frames and wire mesh, will be installed along the east and west sides of each solar field. Tortoise exclusion fencing will be included. Controlled access gates will be located at the site entrances. As discussed below, the drainage channels will be outside the plant facilities and the security fencing but still within the Project ROW.

Site Drainage and Earthwork

The Project site is located approximately five-miles southwest of Ridgecrest in Kern County, California on the southern edge of Indian Wells Valley north of the El Paso Mountains. The existing topographic conditions of the proposed site show an average slope of approximately two feet in 100 feet (two percent) toward the northwest north of Brown Road and toward the north south of Brown Road.

Cross slopes vary from nearly flat to as much as four percent. Steeper slopes occur at transitions into washes. At present, onsite stormwater runs overland and collects in concentrated flows that eventually confluence with El Paso Wash.

Offsite Drainage

The offsite (outside the plant site) drainage area consists of distinct watersheds totaling approximately 35 square miles, which generally drain from elevated areas two to four miles south of the Project northward to relatively more gradually-sloped areas at the approach to the solar field(s). Natural vegetation within the watersheds can be described as sporadic scrub brush typical of local high desert conditions.

Each of these channels will require minor diversions to direct watershed flow from existing natural channels around the solar fields and back into the same natural channels down-slope of the solar fields. These diversions will not substantially add or subtract flow amounts. They simply route natural drainage around the fields.

Each of the proposed offsite diversion channels is being sized to contain the 100-year, 24-hour storm event as defined in the Kern County Hydrology Manual and will include necessary earth compaction and riprap side-slope protection along key reaches (e.g., directional transitions, natural-to-proposed channel transitions, proposed-to-natural channel transitions, and reaches with significant design velocities).

Onsite Drainage

There are no perennial streams in the Project watershed and the vast majority of the time, the area is dry and devoid of any surface flow anywhere. Water runoff occurs only in response to infrequent intense rain storms. There are numerous small washes which traverse the site and outfall into progressively more defined channels. All of the onsite washes are eventually tributary to El Paso Wash.

Onsite stormwater from the solar fields is drained by a collection of onsite interior channels parallel to the solar collectors that direct stormwater sheet flow from the solar fields to increasing larger interior channels to points of direct discharge into the creeks through best management practice erosion control facilities.

The solar fields will be terraced into multiple relatively flat south-to-north plains that will generally slope east-to-west from nearly level to as steep as two percent. Permeability of natural onsite soils is being considered for estimation of stormwater sheet flow infiltration and modeling of onsite storm runoff. The ground located beneath proposed solar mirrors is currently assumed to maintain permeability of existing soil inasmuch as this area will not be paved.

The predominant onsite soil is classified as “s1024” Wasco-Rosamond-Cajon or U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) hydrologic soils groups A and B, characterized as soil with moderate to excellent permeability. The offsite upland soils to the east and west of the site are classified as hydrologic soils groups C and D, characterized as soil with low levels of permeability.

The onsite interior channels for each field include north-south-oriented swales that will collect and direct stormwater sheet flow to two main westward-sloped channels located at the terraces, to be located approximately 0.25 mile and 0.75 mile north of the

southern limit of each solar field. The channels convey water directly to existing creeks as previously mentioned. Culverts will be provided across the channels for essential onsite roads.

The power block area will have its own detention/water quality basin. The power block will generally drain by sheet flow or swales to the basin. The basin will be designed to mitigate the 25-year storm flow and to provide water quality mitigation. Oil and chemical storage areas within the power block will have their own containment features. The basin will also be designed to retain for a short duration prior to outfall to the nearest downstream channel.

Grading Plan

The preliminary site grading plan is designed to be balanced; no import or export of soil is expected for general earthwork. The grading plan does not contemplate any soil shrinkage or other losses. When the geotechnical investigation report is available for the site, the grading plan will be adjusted to account for any loss in elevation that could occur. Engineered fill will be provided as required for equipment and structure foundations as/if recommended by the geotechnical report. Only soil material approved by the geotechnical engineer will be used for structural fill. Additionally, granular material may need to be imported for the use as road base and possible use below foundations. Grading of the site will commence at the beginning of the construction period and will last over a period of approximately 24 months. Such an extended grading period will require less water on a daily basis for grading operations as well as for dust control over a smaller area.

B.1.2.4.12 Applicant's Proposed Avoidance; Minimization; and Mitigation Measures

In the Application for Certification (09-AFC-9) and related Data Responses, the applicant, Solar Millennium, identified and proposed a number of avoidance, minimization and mitigation measures. Those measures are discussed in detail in the AFC, as well as in the technical analyses contained in this overall document. The measures are listed by technical area and summarized, below:

Air Quality

The applicant has proposed 12 measures to avoid; minimize and or mitigate the project's impacts to air quality. The measures are described in detail in the 09-AFC-9, 5.2-53 through 5.2-57, and are generally described as follows:

- Best Available Control Technology (BACT);
- Construction Dust Control Plan;
- Operations Dust Control Plan;
- Implement Diesel Fueled Engine Controls;
- Use gasoline powered light trucks, equivalent of the Ford F150 model, for facility maintenance, except for mirror washing, welding rigs, or other specific activities which requires a larger vehicle. Only new trucks meeting California on-road vehicle

emission standards will be purchased for use at the site. In addition, only electrical powered all-terrain vehicles or other low-emission vehicles will be used to support the maintenance crew within the facility.

- Restrict operating hours for the auxiliary boiler and HTF heater;
- Restrict flow rate and total dissolved solids (TDS) in the auxiliary cooling tower; and
- Comply with all permit conditions imposed by Kern County Air Pollution Control District (KCAPCD).

Biological Resources

In the AFC, the applicant proposed 51 measures to avoid; minimize and or mitigate the project's impacts to biological resources (flora and fauna); and waters of the state. The measures are described in detail in the 09-AFC-9 pages 5.3-53 through 5.3-63. The applicant also proposed a Habitat Mitigation and Monitoring Plan (SM 2010n). The measures are generally described as follows:

- Provide conservation easement(s) on; and enhance 7,078 acres of lands with habitat that supports Mohave Ground Squirrel, Desert Tortoise and Western Burrowing Owl;
- Implement the Habitat Mitigation and Monitoring Plan;
- Apply approved mitigation bank credits;
- Contribute to an approved In-Lieu fee program established for the purpose of acquiring conservation easement(s), and/or habitat creation-restoration, and/or enhancement;
- Use Best Management Practices (BMPs) in the construction and operation phases;
- Employ a biologist to oversee the BMPs during construction; and
- Educate construction workers and permanent employees to implement BMPs.

Cultural Resources

The applicant has proposed eight (8) measures to avoid; minimize and or mitigate the project's impacts to cultural resources. The measures are described in detail in the 09-AFC-9, 5.4-28 through 5.4-29, and are generally described as follows:

- Retain a qualified Cultural Resources Specialist to prepare and implement a Historic Property Treatment Plan (HPTP) for the affected resources. The Principal Investigator for the HPTP program will meet the minimum Principal Investigator qualifications under the Secretary of Interior's Standards for Archaeology.
- Prepare a mitigation plan in accordance with state and federal guidelines. It is worth noting this appears to reflect the current efforts by the BLM and CEC to develop and adopt a BLM-SHPO-CEC Programmatic Agreement that is expected to reduce the potential impacts of the proposed project on the subject resources to a less than significant level per CEQA standards.
- Provide Worker Environmental Awareness Program training during construction to assist in worker compliance with cultural resource protection procedures. The

training will include photographs of a variety of historic and prehistoric artifacts and will include a description of the specific steps to be taken in the event of an unanticipated discovery of cultural material, including human remains.

Geologic Hazards and Resources

The applicant has proposed two (2) measures to avoid; minimize and or mitigate the project's impacts to geologic resources; and hazards. The measures are described as follows:

- Power plant structures and equipment as well as offsite linear facilities (natural gas, pipeline and transmission line) will be designed in accordance with Seismic Zone 4 requirements.
- Project foundations will be designed in accordance with recommendations (e.g., over excavation and recompaction beneath project structures and paved areas) provided in the Preliminary Geotechnical Investigation Report and as amended by future geotechnical investigations.

Hazardous Materials Handling

The applicant has proposed seven (7) measures to avoid; minimize and or mitigate the project's impacts from hazardous materials handling. The measures are described in detail in the 09-AFC-9, 5.6-23 through 5.6-25, and are generally described as follows:

- Implementing protocols for servicing and refueling construction equipment;
- Proper labeling of hazardous materials;
- The project owner will develop and implement spill response procedures. Personnel working with hazardous materials will be trained in proper handling and emergency response to chemical spills or accidental releases. Additionally, designated personnel will be trained as a facility hazardous materials response team.
- The project owner will develop and implement several programs to address hazardous materials storage and security, emergency response procedures, employee training requirements, hazard recognition fire safety, first-aid and emergency medical procedures, hazardous materials release containment and control procedures, hazard communication training, PPE training, and release reporting requirements.

Land Use

The applicant has proposed two (2) measures to avoid; minimize and or mitigate the project's impacts to land uses. The measures are described as follows:

- Prior to construction, the Applicant will obtain and, provide to the CEC's Compliance Project Manager a copy of the BLM ROW Grant and an amendment to the CDCA to comply with BLM's CDCA Plan and Title 43 CFR Part 2800.
- The Applicant will work with the BLM to reroute existing trail access to minimize impacts to recreational and OHV users in the area.

Noise

The applicant has proposed eight (8) measures to avoid; minimize and or mitigate the project's impacts to ambient noise levels. The measures are described in detail in the 09-AFC-9, 5.8-14 through 5.8-16, and are generally described as follows:

- At least 15 days prior to the start of ground disturbance, the Project owner shall notify all residents within one mile of the site and the linear facilities, by mail or other effective means, of the commencement of Project construction. At the same time, the Project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the Project.
- The Project owner shall submit to the CPM for review and approval a noise control program. The noise control program shall be used to reduce employee exposure to high noise levels during construction and also to comply with applicable OSHA and Cal/OSHA standards.
- If needed to resolve a noise complaint from a residence in the Project vicinity, the Project owner shall make arrangements with the owner of the residence up to and including retrofitting the dwelling (e.g., sound wall, improved insulation and windows).
- If a traditional, hg-pressure steam blow process is used, the Project owner shall perform the steam blow in such a manner that the noise level is not greater than 110 dBA measured at 100 feet from the property line. The steam blows shall be conducted between 8 A.M. to 5 P.M. unless arranged with the CPM such that offsite impacts would not cause annoyance to receptors. If a low-pressure, continuous steam blow process is proposed, the Project owner shall submit to the CPM a description of the process, with expected noise levels and planned hours of operation.

Paleontological Resources

The applicant has proposed eight (8) measures to avoid; minimize and or mitigate the project's impacts to sensitive paleontological resources. The measures are described in detail in the 09-AFC-9, 5.9-10 through 5.9-12, and are generally described as follows:

- Develop and implement a Paleontological Resource Monitoring and Mitigation Plan (PRMMP). The plan will identify general and specific measures to meet the performance standards described in the AFC which will minimize potential impacts to sensitive paleontological resources.
- Prior to the start of any project-related construction (defined as construction-related vegetation clearing, ground disturbance and preparation, and site excavation activities), the project owner will employ a paleontological resource specialist to implement the PRMMP, prepare and administer a staff training program, and monitor construction-related grading, excavation, trenching, and/or augering in areas with a significant potential for fossil-bearing sediments to occur.

Public Health

The applicant has proposed several measures to avoid; minimize and or mitigate the project's impacts to public health. The measures are described in detail in the 09-AFC-9, 5.10-20 through 5.10-20, and are generally described as follows:

- To control bacteria levels in cooling water, the Project operators will accept a condition of certification to ensure that the potential for bacterial growth is kept to a minimum by establishing and implementing a cooling tower program covering Biocide Use, Biofilm Prevention, and Legionella Monitoring.
- To minimize cooling tower drift from the auxiliary cooling tower, the Project will install a high efficiency drift eliminator and implement a drift eliminator inspection and maintenance program. Drift eliminators on the cooling tower will control misting and significantly reduce non-criteria emissions from the cooling tower by minimizing cooling tower drift, mist, water aerosolization, and emission of contaminants that may be present in the cooling tower make-up water that may become entrained in liquid water droplets.
- The Project owner shall develop and implement a Cooling Water Management Plan that is consistent with either the CEC Staff's Cooling Water Management Program Guidelines or the Cooling Technology Institute's Best Practices for Control of Legionella guidelines.
- Emissions of criteria pollutants will be minimized by applying BACT to the emission sources, which will include the use of propane as fuel in the auxiliary boiler and HTF heater, and low-sulfur diesel fuel in the firewater pump and emergency generator engines.

Socioeconomics

In the area of socioeconomics, there are no environmental justice concerns therefore there are not any avoidance, minimization or mitigation measures proposed by the applicant.

Soils

The applicant has proposed three (3) measures to avoid; minimize and or mitigate the project's impacts to soil resources. The measures are described in detail in the 09-AFC-9, 5.12-9 through 5.12-10, and are generally described as follows:

- Erosion and sedimentation control measures may include but are not limited to: minimizing disturbance; wetting the roads in active construction areas and laydown areas; controlling speed on unpaved surfaces; placing gravel in entrance ways; use of straw bales, silt fences, and earthen berms to control runoff.
- Conduct Project construction grading in compliance with industry best practices and Kern County grading permit requirements.
- Implementation of a Storm Water Pollution Prevention Plans (SWPPP) and a Drainage Erosion Sediment Control Plan (DESCP), which contain Best Management Practices (BMPs), will be implemented to avoid significant runoff and water quality impacts during Project construction and operations. Conduct Project construction activities and operation in accordance with the construction and operation phase

SWPPPs and the DESCP. These documents both will include BMPs to reduce erosion and sedimentation (e.g., use of runoff control measures such as hay bales and silt fences, and regular inspections of drainage control structures).

Traffic and Transportation

The applicant has proposed three (3) measures to avoid; minimize and or mitigate the project's impacts to traffic and transportation resources. The measures are described in detail in the 09-AFC-9, 5.13-19, and are described as follows:

- Develop and implement a construction phase Traffic Management Plan (TMP) in consultation with Caltrans and Kern County for the roadway network potentially affected by construction activities at the plant site and offsite linear facilities.
- Conduct construction activities in accordance with Caltrans and other applicable limitations on vehicle sizes and weights, Construction Excavation Permits obtained from the Kern County, Encroachment Permits from Caltrans, as well as permits and licenses from the California Highway Patrol and Caltrans for the transport of hazardous substances.
- Split the arrival of the workforce in the morning into two parts arriving one hour or more apart when the total number of workers on site will exceed 300.

Transmission Line Safety and Nuisance

In the area of transmission line safety and nuisance, there are not any avoidance; minimization or mitigation measures proposed by the applicant.

Visual Resources

In the area of visual resources, there are not any avoidance, minimization or mitigation measures proposed by the applicant.

Waste Management

The applicant has proposed seven (7) measures to avoid; minimize and or mitigate the project's waste generation. The measures are described in detail in the 09-AFC-9, 5.16-20 through 5.16.23, and are described as follows:

- Implementation of a detailed Construction Waste Management Plan for all wastes generated during project construction. The plan will meet the performance standards described in the AFC.
- A detailed Operation Waste Management Plan and procedures to minimize hazardous and non-hazardous waste generation will be prepared 60 days prior to startup of the facility to assure proper storage, labeling, packaging, record keeping, manifesting, minimization, and disposal of wastes. The plan will meet the performance standards described in the AFC.
- A comprehensive reporting plan will be developed and implemented to ensure spills and releases of hazardous substances, hazardous materials, or hazardous waste are reported, cleaned-up, and remediated, as necessary, in accordance with all

applicable Federal, State, and local requirements. The reporting plan will be incorporated within the Construction Waste Management Plan and the Operation Waste Management Plan.

- Prior to onsite construction activities, construction employees will receive waste training, specifically on the Construction Waste Management Plan to ensure compliance with Federal, State, and local requirements emphasizing the protection of workers, the public, and the environment.
- The project owner will obtain a hazardous waste generator identification number from the DTSC prior to generating any hazardous waste during construction and operations. Hazardous wastes will be collected by a licensed hazardous waste hauler using hazardous waste manifests. Hazardous waste generator reports will be submitted biannually to DTSC. Copies of manifests, reports, waste analyses, exception reports, etc. will be kept on site and available for inspection for at least three years.

Water Resources

In the AFC, the applicant proposed eight (8) measures to avoid; minimize and or mitigate the project's impacts to water resources. The measures are described in detail in the 09-AFC-9 pages 5.17-38 through 5.17-39. The applicant also proposed a Water Offset Plan to mitigate impacts to water resources (SM 2010k). The measures are generally described as follows:

- Implementation of a Storm Water Pollution Prevention Plans (SWPPP) and a Drainage Erosion Sediment Control Plan (DESCP), which contain Best Management Practices (BMPs)
- In accordance with Kern County's Floodplain Management Ordinance and 44 CFR 65, the project owner shall prepare all necessary engineering plans and documents to support a CLOMR application submittal to FEMA. The project shall not commence construction in the Special Flood Hazard Area until the Kern County receives from FEMA a CLOMR.
- The Project owner will record on a monthly basis the amount of groundwater pumped by the Project; including a Notice of Extraction and Diversion of Water consistent with the SWRCB requirements (Water Code Sections 4999 et seq.).
- The project owner will measure groundwater levels on a monthly basis for the proposed water supply wells and those wells that might be affected by proposed project pumping for the first six months following the Project start up, and thereafter on a quarterly basis.
- The project owner proposes to provide a variety of "offsets" to the anticipated annual operational water usage.

Worker Safety

In the AFC, the applicant has identified, proposed and described performance standards for more than 23 separate worker safety programs. Because the applicant has proposed to implement the various worker safety programs and procedures

discussed in the AFC, thus complying with the applicable regulatory requirements to maintain a safe workplace, the applicant has not proposed any “mitigation” measures to address impacts to worker safety.

B.1.3 INDIVIDUAL DESCRIPTIONS OF THE PROPOSED PROJECT AND ALTERNATIVES

The following descriptions identify the elements that are unique to each project alternative. Please refer to the figures at the end of this section that illustrate each project, as further described below.

B.1.3.1 PROPOSED PROJECT (ALTERNATIVE #1)

Please refer to **Project Description Figure 1, Site Plan** to see the major project features of the proposed Project. As compared with the Alternatives described in this section, the elements that are unique to this Project are generally described, as follows:

- A rated capacity of 250 MW;
- Total disturbance area of 1,944;
- Avoidance of El Paso Wash;
- Reduced project footprint in the Mohave Ground Squirrel conservation area;
- Additional disturbance area in the northern portion of the ROW;
- Rerouting several unnamed dry washes around the southern solar field; and the northern solar field;
- Primary access to the site would be from US Route 395, approximately 2-miles north of the Brown Road & US ROUTE 395 intersection;
- Emergency access to site is from Brown Road via a new 24-foot wide paved road. To provide safe ingress and egress, two 1,500-foot long acceleration and two 1,000-foot long deceleration lanes will be built on Brown Road to accommodate eastbound and westbound ingress/egress.
- Annual water demand of 150 acre-feet per year;
- Relocation of approximately 1.6-miles of existing electrical transmission lines;

B.1.3.2 NORTHERN UNIT ONLY (ALTERNATIVE #2)

Please refer to **Project Description Figure 2, Site Plan** to see the major project features of northern unit alternative and are generally described, as follows:

- A rated capacity of 146 MW;
- Total disturbance area of 1,118 acres;
- Avoids relocation of approximately 1.5-miles of existing electrical transmission lines;
- Avoidance of El Paso Wash;
- Avoidance of the Mohave Ground Squirrel conservation area (south of Brown Road);

- Avoidance of waters of the state (dry washes), south of Brown Road;
- Rerouting one minor dry wash around the solar field;
- Access to the site from US ROUTE 395, approximately 2-miles north of the Brown Road & US ROUTE 395 intersection;
- Emergency access to site is from Brown Road;
- Annual water demand of 90 acre-feet per year;

B.1.3.3 SOUTHERN UNIT ONLY (ALTERNATIVE #3)

Please refer to **Project Description Figure 3, Site Plan** to see the major project features of the southern unit that are unique to the alternative and are generally described, as follows:

- A rated capacity of 104 MW;
- Total disturbance area of 809 acres;
- Relocates approximately 1.6-miles of existing electrical transmission lines;
- Avoids El Paso Wash;
- Avoids the majority of Desert Tortoise population and its habitat (most located north of Brown Road);
- Avoids waters of the state (dry washes, north of Brown Road);
- Reroutes one minor dry wash around the solar field;
- Access to the site from Brown Road;
- Annual water demand of 68 acre-feet per year;

B.1.3.4 ORIGINAL PROPOSED PROJECT (ALTERNATIVE #4)

Please refer to **Project Description Figure 4, Site Plan** to see the layout of the major project components. As compared with the Alternatives described in this section, the elements that are unique to this Project are generally described, as follows:

- A rated capacity of 250 MW;
- Total disturbance area of 1,760 acres;
- Relocates approximately 1.6-miles of existing electrical transmission lines;
- Overlays portions of El Paso Wash;
- Reduces disturbance area in the northern portion of ROW;
- Reroutes three minor dry washes around the solar fields;
- Access to the site from Brown Road;
- Annual water demand of 150 acre-feet per year;

B.1.4 PROJECT CONSTRUCTION; SCHEDULE, MANPOWER, AND SEQUENCING

Each project alternative would require a construction period of approximately 28 months. Alternatives #1 and #4 will require an average of 405 employees over the entire 28-month construction period, with manpower requirements peaking at approximately 633 workers in Month 11 of construction. Alternatives #2 and #3 will require an average of 200 employees over the entire 28-month construction period, with manpower requirements peaking at approximately 315 workers in Month 11 of construction.

The construction workforce will consist of a range of laborers, craftsmen, supervisory personnel, support personnel, and management personnel. Major milestones of the planned construction schedule are as follows:

- Begin construction: fourth quarter 2010
- Start of commercial operations: mid-2013

Temporary construction parking areas will be provided within the power plant site adjacent to the laydown area. The plant laydown area will be utilized throughout the build out of the two solar fields. The construction sequence for power plant construction includes the following general steps:

- **Site Preparation:** This includes detailed construction surveys, mobilization of construction staff, grading, and preparation of drainage features. Grading for the solar field, power block, and drainage channels will be completed during the first 18 months of the construction schedule.
- **Linears:** This includes the site access road, telecommunication line, transmission line, and water pipeline. The site access road and telecommunication line will be constructed during the first 6 months of the construction schedule in conjunction with plant site preparation activities. The onsite transmission line, telecommunications line, and water line will be constructed during the first 18 months of the construction schedule. The re-alignment of the existing SCE line is proposed to begin in the 18th month and be complete in the 27th month.
- **Foundations:** This includes excavations for large equipment (STG, SSG, GSU transformer, etc.), footings for the solar field, and ancillary foundations in the power block.
- **Major Equipment Installation:** Once the foundations are complete the larger equipment will be installed. The solar field components will be assembled in an onsite erection facility and installed on their foundations.
- **BOP:** With the major equipment in place, the remaining field work will include piping, electrical, and smaller component installations.
- **Testing and Commissioning:** Testing of subsystems will be conducted as they are completed.

Major equipment will be tested once all supporting subsystems are installed and tested.

B.1.4.1 FIRE PROTECTION

A Construction Fire Protection and Prevention Plan will be developed and followed throughout all phases of construction. The permanent facility fire protection system will be put into use during construction as soon as is practicable. Prior to the availability of this system, fire extinguishers and other portable fire fighting equipment will be available on site. All equipment will be California Occupational Safety and Health Administration (Cal/OSHA) compliant. Locations of portable fire fighting equipment may include portable office spaces, welding areas, flammable chemical areas, and vehicles and other mobile equipment.

B.1.4.2 CONSTRUCTION WATER

To meet Project construction water needs involves providing water for all construction related activities. These activities include:

- Dust control for areas experiencing construction work as well as mobilization and demobilization,
- Dust control for roadways,
- Water for grading activities associated with both cut and fill work,
- Water for soil compaction in the utility and infrastructure trenches,
- Water for soil compaction of the site grading activities,
- Water for soil stockpile sites,
- Water for the various building pads, and
- Water for concrete pours on site.

The predominant use of water will be for grading activities, which will have a steady rate of work each month. The grading schedule for the site has been spread to cover the total construction period. This will mean that water use will be steady and without definable peaks. Construction water will be sourced from IWWWD. Potable water during construction will be brought on site in trucks and held in day tanks.

B.1.4.3 CONSTRUCTION OF TRANSMISSION FACILITIES

The transmission line will be constructed in accordance with the guidelines of the Institute of Electrical and Electronics Engineers Guide 524 “Guide to the Installation of Overhead Transmission Line Conductors” with crews working continuously along the ROW, with construction of the entire transmission line requiring a peak workforce of approximately 20 workers. Transmission line construction will include the installation of tubular steel poles involving the following sequence of activities:

- Marshalling Yards: Staging areas for trailers, office personnel, equipment, material staging, laydown and employee parking for the Project will be established in an approved area.
- Road Work: As needed, dirt roads for access along the transmission line route to provide access to the structure locations. These access roads will be installed in locations that avoid sensitive environmental resources identified in Project environmental surveys.

- Pole Erection: Each pole will be assembled on site and dressed out with insulators and conductor hardware.
- Conductors: From pulling sites, the conductors will be installed, sagged and permanently connected to the insulators.
- Pulling Sites: There will be approximately three pulling sites required to install the conductors.
- Communication System: The overhead ground/fiber optic communications cable will be installed using the same pulling sites as were used for the conductor installation.

The transmission lines for this site will be 230 kV lines and will be placed on steel monopoles up to 120 feet in height. The lines and monopoles will be placed entirely within the Project ROW. The poles have a base width of 5 to 6 feet and a top width of 1 to 2 feet, depending on local conditions. The construction corridor is also entirely within the Project ROW.

The towers will be installed using cranes to place the towers on concrete foundations buried in the ground. The construction footprint at the tower locations is approximately 20 feet x 20 feet. The laydown area is contained within the construction corridor along the full alignment. Fifteen-foot wide access roads will be constructed adjacent to the towers for the full length of the alignment as described above under Transmissions Structures. Pull sites are the same general locations as the tower sites. The pull will originate from the end of the alignment and will progress from tower to tower for the full alignment using pulley rigs and cables.

B.1.5 PROJECT OPERATIONS AND MAINTENANCE

The thermodynamic cycle is illustrated in **Project Description Figure 5**, found at the end of this section. The red lines on the diagram represent HTF piping. Hot HTF flows from top to bottom in the figure, arriving from the solar fields and transferring heat in the superheater and reheater, then to the steam generator, and lastly in the preheater before returning to the solar fields to be heated again. The blue lines represent steam and water piping. Feedwater, the portion of the blue line between the ACC and the preheater, is heated in a series of feedwater heaters by steam turbine extractions at various pressure levels.

The power generation process is described as follows:

- Step 1: The power cycle working fluid (water) from the deaerator and feedwater heaters is pumped from low to high pressure and piped to the solar preheater. HTF provides heat to the preheater which heats the feedwater to its saturation temperature.
- Step 2: The high pressure saturated water enters the steam generator where it is heated by warmer HTF. The water changes phase (i.e., boils) and exits as saturated steam.

- Step 3: The saturated steam flows through to the superheater where hot HTF takes the saturated steam at constant pressure up to higher temperature prior to being fed to the high pressure section of the steam turbine.
- Step 4: The superheated steam expands through the high-pressure section of the steam turbine turning the generator to produce electricity.
- Step 5: The steam let down from the turbine's high-pressure section is then reheated in a solar reheater which is fed with hot HTF. The reheated steam is then fed to the intermediate pressure section of the steam turbine.
- Step 6: The intermediate-pressure steam exhausts into the low-pressure section of the steam turbine. All sections of the STG decrease the temperature and pressure of the steam with the low-pressure section extracting the last available power from the steam.
- Step 7: The wet steam from the low-pressure section then enters the ACC where it is cooled at a constant low pressure to become a saturated liquid. The condensed liquid returns to the feedwater heater train and the beginning of the steam cycle to begin the process again.

B.1.5.1 DISTRIBUTED CONTROL SYSTEM (DCS)

The distributed control system (DCS) contains several automation units; controls the HTF and steam loops and all auxiliary plant systems, and determines the appropriate operating sequences for them. It also monitors and records the primary operating parameters and functions as the primary interface for system control. The DCS communicates with all subsystem controls, including electrical system equipment, steam cycle controllers, variable frequency drives, and BOP system controllers via serial data communication. It receives analog and digital inputs/outputs (I/O) from all instruments and equipment not served directly by dedicated local controllers. The DCS controls both the steam and HTF cycles directly, operating rotating equipment via relevant electrical panels. It includes a graphical user interface at an operator console in the main control room.

Day-to-day, the following operation modes are usually passed in the HTF system: warm up, solar field mode (heat transfer from solar field to power block), shutdown, and freeze protection.

Warm Up

Usually in the morning, this mode brings the HTF flow rate and temperatures up to their steady-state operating conditions by positioning all required valves, starting the required numbers of HTF main pumps for establishing a minimum flow within the solar field and tracking the solar field collectors into the sun.

At the beginning of warm up, HTF is circulated through a bypass around the power block heat exchangers until the outlet temperature reaches the residual steam temperature in the heat exchangers. HTF is then circulated through the heat

exchangers and the bypass is closed. As the HTF temperature at the solar field outlet continues to rise, steam pressure builds up in the heat exchangers until the minimum turbine inlet conditions are reached, upon which the turbine can be started and run up to speed. The turbine is synchronized and loaded according to the design specification until its power output matches the full steady-state solar field thermal output.

Solar Field Control Mode

The DCS enters solar field control mode automatically after completing warm-up mode. It regulates the flow by controlling the HTF main pump speeds to maintain the design solar field outlet temperature. Several HTF pumps will generally be operated in parallel, at the speed required to provide the required flow in the field. If the thermal output of the solar fields is higher than the design capacity of the steam generation system, collectors within the solar fields are de-focused to maintain design operating temperatures.

Shutdown

If the minimal thermal input to the turbine required by the operating strategy cannot be met under the prevalent weather conditions, then shutdown is indicated. Operators will track all solar collectors into the stow position, reduce the number of HTF main pumps to a minimum, and stop the HTF flow to the power block heat exchangers.

Freeze Protection

During periods when the solar power generating facility is shutdown, HTF is circulated through the piping in the solar fields at low flow rate. For most of the year, under typical weather conditions, no supplemental heat is required to keep the HTF flowing freely. However, it is anticipated that on colder winter nights supplemental heat will be required to ensure the HTF doesn't freeze in the piping. A propane-fired HTF heater, with a rated capacity of 35 MMBtu/hr, will be provided as part of the HTF system. It is expected the HTF heater will need to operate approximately 100 hours per year to keep the HTF from freezing.

B.1.5.2 ELECTRICAL SYSTEM DESCRIPTION

This section describes the Project's major electrical systems and equipment. All power produced by the Project is expected to be delivered to the SCE transmission grid through interconnection with SCE's 230 kV Inyokern/Kramer Junction transmission line. Descriptions of major electrical systems and equipment provided in the following subsections refer to alternating current (AC) power unless otherwise noted.

Electrical Generation

The STG will generate electricity at 18 kV and will connect to the Project switchyard described in the above paragraph. An oil-filled GSU transformer will step up the voltage to 230 kV.

DC Power Supply System

An uninterruptible power system (UPS) will be provided in the plant. The UPS will service emergency lighting, the DCS, electrical breakers, and relays. This direct current (DC) power system will serve as a temporary bridge to the more robust emergency diesel AC power supply in the event external power is suddenly lost.

Essential Service AC System

A 120 volt essential service AC power distribution system serves critical equipment loads, lighting and alarms, and loads that protect equipment from potential damage in the event of sudden loss of station service. This system is served through an inverter that receives power from the DC power supply system.

B.1.5.3 PLANT AUXILIARY SYSTEMS

The following subsections describe the various power plants auxiliary systems (fuel supply, water supply, water treatment, cooling systems, waste management, etc.) associated with the Project.

Fuel Supply and Use

The auxiliary boiler and HTF heater will be fueled by propane. Propane will be delivered to the site via truck from a local distributor and stored in an 18,000 gallon aboveground tank. The estimated propane usage for normal operations is 8 MMBtu/hr overnight and 34 MMBtu/hr for ½ hour during startup each morning. The estimated peak propane usage is approximately 70 MMBtu/hr when the HTF heater is in use during the winter when the plant is in startup mode, i.e., while the auxiliary boiler is simultaneously operating at capacity.

Water Use

The Project will be dry cooled. The Project's various water uses include water for solar collector mirror washing, makeup for the SSG feedwater, dust control, water for cooling plant ancillary equipment, potable water, and fire protection water. Usage rates will vary during the year and will be higher in the summer months when the peak flow rate could be as much as about 50 percent higher (about 132 gpm). Equipment sizing will be consistent with peak daily rates to ensure adequate design margin.

Water Source and Quality

The water source for the Project is groundwater provided through the IWWWD. Power cycle makeup and other water needs for the Project will be met by treating the water supply. While the proposed Project lies outside the IWWWD service area, it is within about four miles of the District boundary. The Project will be required to provide a new pipeline to bring IWWWD water from the Ridgecrest Heights storage tank to the RSPP. The Project may also be responsible for modifying pumping equipment at the IWWWD Ridgecrest Heights Booster Station ensure adequate pressure and delivery to the Project site (modifications could include the construction of a new pump station). The Project's water demands will amount to about 1.6 percent of the existing IWWWD demand. Quality of water from IWWWD is given the following table.

Water Quality Table (IWWWD Supply)

3Constituent Concentration	
Total Dissolved Solids	mg/L 200 - 700
Specific Conductance	µS/cm 150 - 590
Alkalinity	mg/L as CaCO ₃ 84 - 140
Hardness	mg/L as CaCO ₃ 10 - 190
Chloride	mg/L 24 - 280
Sodium	mg/L 42 - 190
Boron	µg/L 150 - 1,400
pH 7.9 - 8.8	

Source: IWWWD 2007 Annual Water Quality Report

Water Treatment

Water received from IWWWD will meet the requirements of the California Department of Health Services for potable water supplies and will not require further treatment for this purpose. Power cycle makeup, mirror washing water, and cooling of ancillary equipment will require onsite treatment for reduction of dissolved solids, and this treatment varies according to the quality required for each of these uses.

Water will be received via pipeline and stored in a 1.5 million-gallon potable water storage tank. This tank will also serve as storage for firewater supply. Excluding any use for firefighting, this volume of potable water would provide enough storage capacity for five days interruption of water supply to the facility.

The treatment process for reduction of dissolved solids is known as desalination, and can be accomplished by either thermal processes (evaporation/condensation) or membrane processes such as reverse osmosis (RO) or electrodialysis reversal (EDR). Considering the relatively good quality of the source water, it is unlikely that thermal processes would be cost effective. Accordingly, only membrane processes are considered here. Since RO and EDR produce similar product water quality and waste streams, further discussion will reference only RO for simplicity. Selection of the process to be used at the Project will be made during the final design process.

Membrane desalination processes split the feed stream into two streams: 1) a product water stream (permeate) with reduced salinity and 2) a concentrate stream containing the majority of the salts that were in the feed stream. Desalination processes are usually designed to operate with the highest safe recovery (recovery is the fraction of feedwater recovered as permeate) in order to minimize water loss, since the concentrate would normally be considered a waste stream. In this case, it appears that the highest safe recovery is about 93 percent. The permeate stream will be directed to a 600,000-gallon treated water tank storage tank. This tank will provide three days storage for these

uses, which will extend the amount of time available for operation during potable water supply outages. The RO concentrate stream, which will be utilized onsite for dust control, will be directed to a 100,000-gallon storage tank.

In order to provide the demineralized water quality needed for power cycle makeup it will be necessary to provide ion exchange demineralization as a final treatment step after RO. Ion exchange demineralization can be done using either permanently installed equipment or portable demineralizers. Permanently installed equipment requires regeneration on site, which can require storage and disposal of significant quantities of sulfuric acid and sodium hydroxide (caustic).

Alternatively, portable demineralizers are taken off site for regeneration at the supplier's facility, so no onsite storage of chemicals and disposal of regeneration wastes is required. Offsite regeneration is proposed for the Project. This will eliminate the need to store regeneration chemicals on site and minimize onsite production of hazardous wastes. These demineralizers will be provided as forklift moveable fiberglass "bottles" that will be traded out when exhausted and returned to the supplier for regeneration.

The steam purity specification is based on VGB's "Guidelines for Feed Water, Boiler Water, and Steam Quality for Power Plants/Industrial Plants" R450Le, issued 2004.

It is anticipated that all of the power cycle makeup water will be recycled and reused as feed to the RO system. This will reduce the salinity of the RO feed and improve the RO recovery. Because of the very low total dissolved solids (TDS) of the makeup to the ancillary equipment heat rejection cooling tower, it is expected that blowdown will not be required. Rather, drift (windblown mist) will provide the necessary salt removal. If blowdown is required, it will be recycled to the RO system.

It may be more advantageous to recycle the power cycle makeup water to the ion exchange demineralizer rather than to the RO. This modification will be evaluated during final design.

Solar Mirror Washing Water

To facilitate dust and contaminant removal, water from the primary desalination process, RO water, will be used to spray clean the solar collectors on a weekly or as-needed basis, determined by the reflectivity monitoring program. This mirror washing operation is done at night and involves a water truck spraying treated water on the mirrors in a drive-by fashion. Mirror washing equipment utilizes brushes to reduce the amount of water use. It is expected that the mirrors will be washed weekly in winter and twice weekly from mid- spring through mid-fall. The mirrors are angled down for washing therefore water doesn't accumulate on the mirrors. Wash water falls from the mirrors to the ground and, due to the small volume, soaks in with no appreciable runoff. Remaining rinse water from the washing operation is expected to evaporate on the mirror surface with no appreciable runoff.

Cooling Systems

The power plant includes two cooling systems; 1) the air-cooled steam cycle heat rejection system, and 2) the closed cooling water system for ancillary equipment cooling, each of which is discussed below.

Steam Cycle Heat Rejection System

The cooling system for heat rejection from the steam cycle consists of a forced draft ACC, or dry cooling, system. The dry cooling system receives exhaust steam from the low-pressure section of the STG and condenses it to liquid for return to the SSG.

Auxiliary Cooling Water System

The auxiliary cooling water system uses a wet cooling tower for cooling ancillary plant equipment, including the STG lubrication oil cooler, the STG generator cooler, steam cycle sample coolers, large pumps, etc. The water picks up heat from the various equipment items being cooled and rejects the heat to the cooling tower. This auxiliary cooling system will allow critical equipment such as the generator and HTF pumps to operate at their design ratings during hot summer months when the Project's power output is most valuable. An average of 40 afy will be consumed by the auxiliary cooling water system; the maximum rate of consumption is 63 afy in summer.

B.1.5.4. WASTE GENERATION AND MANAGEMENT

Project wastes will be composed of non-hazardous wastes including solids and liquids and lesser amounts of hazardous wastes and universal wastes. The non-hazardous solid waste will primarily consist of construction and office wastes, as well as liquid and solid wastes from the water treatment system. The non-hazardous solid wastes will be trucked to the nearest Class II or III landfill as discussed in **Section C.13 WASTE MANAGEMENT**. Non-hazardous liquid wastes will consist primarily of domestic sewage, and reusable water streams such as RO system reject water, boiler blowdown, and auxiliary cooling tower blowdown. To manage the non recyclable non-hazardous domestic sewage wastes, a septic tank and leach field will be installed.

Wastewater

The Project will produce two primary wastewater streams: 1.) Non reusable sanitary wastewater produced from administrative centers and operator stations, and 2.) Reusable streams including: blowdown from the small ancillary equipment cooling tower for the ancillary equipment heat rejection system; RO reject water; and boiler blowdown.

As noted above, the power generation cycle will not produce cooling tower blowdown because the plant will be dry cooled. A small auxiliary cooling tower will generate a small amount of blowdown which will be reused on site. Sanitary wastewater production will consist of domestic water use. Maximum domestic water use is expected to be less than 83,000 gallons per month (2,700 gallons per day [gpd]). It is anticipated that the wastewater will be consistent with domestic sanitary wastewater and will have Biological Oxygen Demand and Total Suspended Solids in the range of 150 to 250 milligrams per liter (mg/L).

Wastewater Treatment

Sanitary wastes will be collected for treatment in septic tanks and disposed via leach fields located at the power block as well as at the administration and warehouse areas. Smaller septic systems will be provided for the control room buildings to receive sanitary wastes at those locations. Based on the current estimate of 2,700 gpd of sanitary wastewater production per day, a total leach field area of approximately 5,500 square feet will be required spread out among three locations.

Construction Wastewater

Sanitary wastes produced during construction will be held in chemical toilets and transported off site for disposal by a commercial chemical toilet service. Any other wastewater produced during construction such as equipment rinse water will be collected by the construction contractor in Baker tanks and transported off site for disposal in a manner consistent with applicable regulatory requirements.

Onsite Land Treatment Unit (LTU)

The solar field(s) will share the same LTU to bioremediate or land farm soil contaminated from releases of HTF. The LTU will be designed in accordance with Lahontan Regional Water Quality Control Board (RWQCB) requirements and is expected to comprise an area of about 8 acres. The bioremediation facility will utilize indigenous bacteria to metabolize hydrocarbons contained in non-hazardous HTF-contaminated soil. A combination of nutrients, water, and aeration facilitates the bacterial activity where microbes restore contaminated soil within 2 to 4 months.

The LTU will be constructed with a clay liner at least five feet in thickness in accordance with Title 27 requirements. Unsaturated zone monitoring and/or groundwater monitoring will be used to evaluate liner integrity. Nutrients including nitrogen and phosphorus will be added to the contaminated soil to encourage consumption of the HTF by the indigenous bacteria. The soil will remain in the remediation unit until concentrations are reduced to an average concentration of less than 100 mg/kg HTF. Soil contaminated with HTF levels of between 100 and 1,000 mg/kg will be land farmed at the LTU, meaning that the soil will be aerated but no nutrients will be added.

Other Non-Hazardous Solid Waste

Non-hazardous solid wastes may be generated by construction, operation, and maintenance of the Project which are typical of power generation facilities. These wastes may include scrap metal, plastic, insulation material, glass, paper, empty containers, and other solid wastes. Disposal of these wastes will be accomplished by contracted solid refuse collection and recycling services.

Hazardous Solid and Liquid Waste

Hazardous wastes will also be generated during Project construction and operation. During construction, these wastes may include substances such as paint and paint related wastes (e.g., primer, paint thinner, and other solvents), equipment cleaning wastes, and spent batteries. During Project operation, these wastes may include used oils, hydraulic fluids, greases, filters, spent cleaning solutions, spent batteries, and spent activated carbon.

B.1.5.5 HAZARDOUS MATERIALS MANAGEMENT

There will be a variety of hazardous materials used and stored during construction and operation of the Project, as summarized below. **Section C.4 HAZARDOUS MATERIALS MANAGEMENT**, provides additional data on the hazardous materials that will be used during construction and operation, including quantities, associated hazards and permissible exposure limits, storage methods, and special handling precautions. Hazardous materials that will be used during construction include HTF, gasoline, diesel fuel, oil, lubricants, and small quantities of solvents and paints. All hazardous materials used during construction and operation will be stored on site in storage tanks, vessels and containers that are specifically designed for the characteristics of the materials to be stored; as appropriate, the storage facilities will include the needed secondary containment in case of tank/vessel failure. An aboveground carbon steel tank with secondary containment also will be used to store diesel fuel (300 gallons).

B.1.5.6 FIRE PROTECTION

Fire protection systems are provided to limit personnel injury, property loss, and Project downtime resulting from a fire. The systems include a fire protection water system, foam generators, carbon dioxide (CO₂) fire protection systems, and portable fire extinguishers. The location of the Project is such that it will fall under the jurisdiction of the Kern County Fire Department. It is expected that the Project will be classified as an industrial facility under the Kern County Development Standards, and as such, the minimum required fire flow would be 1,500 gpm for four hours. This calls for a minimum fire water storage volume of 360,000 gallons. Firewater will be supplied from the 1.5 million-gallon potable water storage tank located at the power block on the plant site. One electric and one diesel-fueled backup firewater pump, each with a capacity of 1,500 gpm, will deliver water to the fire protection piping network.

The piping network will be configured in a loop so that a piping failure can be quickly isolated with shutoff valves without interrupting water supply to other areas in the loop. Fire hydrants will be placed at intervals throughout the plant site that will be supplied with water from the supply loop. The water supply loop will also supply firewater to a sprinkler deluge system at each unit transformer, HTF expansion tank, and circulating pump area and sprinkler systems at the steam turbine generator and in the administration building.

Fire protection for the solar field will be provided by zoned isolation of the HTF lines in the event of a rupture that results in a fire.

B.1.6 DECOMMISSIONING AND RESTORATION

The project's General Compliance, Conditions of Certification, including the Compliance Monitoring and Closure Plan (Compliance Plan) have been established as required by Public Resources Code Section 25532. Please see Section E, **GENERAL CONDITIONS; COMPLIANCE MONITORING AND CLOSURE PLAN**. The plan provides a means for assuring that the facility is constructed, operated, and closed in compliance with public health and safety, environmental and other applicable regulations, guidelines, and conditions adopted or established by the California Energy

Commission and specified in the written decision on the Application for Certification or otherwise required by law. The Compliance Plan will be integrated with a U.S. Bureau of Land Management (BLM) Compliance Monitoring Plan (hereafter referred to as the Compliance Plan) to assure compliance with the terms and conditions of any approved Right-of-Way (ROW) grant including the approved Plan of Development (POD)

The Compliance Plan is composed of elements that:

- Set forth the duties and responsibilities of BLM's Authorized Officer, the Compliance Project Manager (CPM), the project owner, delegate agencies, and others;
- Set forth the requirements for handling confidential records and maintaining the compliance record;
- State procedures for settling disputes and making post-certification changes;
- State procedures for requesting and approving ROW Grant or POD changes;
- State the requirements for periodic compliance reports and other administrative procedures that are necessary to verify the compliance status for all BLM and Energy Commission approved conditions of certification/mitigation measures;
- Establish requirements for modifications or amendments to facility closure, revegetation, and restoration plans; and
- Specify conditions of certification for each technical area containing the measures required to mitigate any and all potential adverse project impacts associated with construction, operation and closure. Each specific condition of certification also includes a verification provision that describes the method of assuring that the condition has been satisfied.

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SM 2009c - Solar Millennium/N. Tenenbaum (tn 53251). Letter Regarding Confidential Cluster Phase I Interconnection Study Title, dated 9/16/2009. Submitted to CEC/Docket Unit on 9/16/2009.

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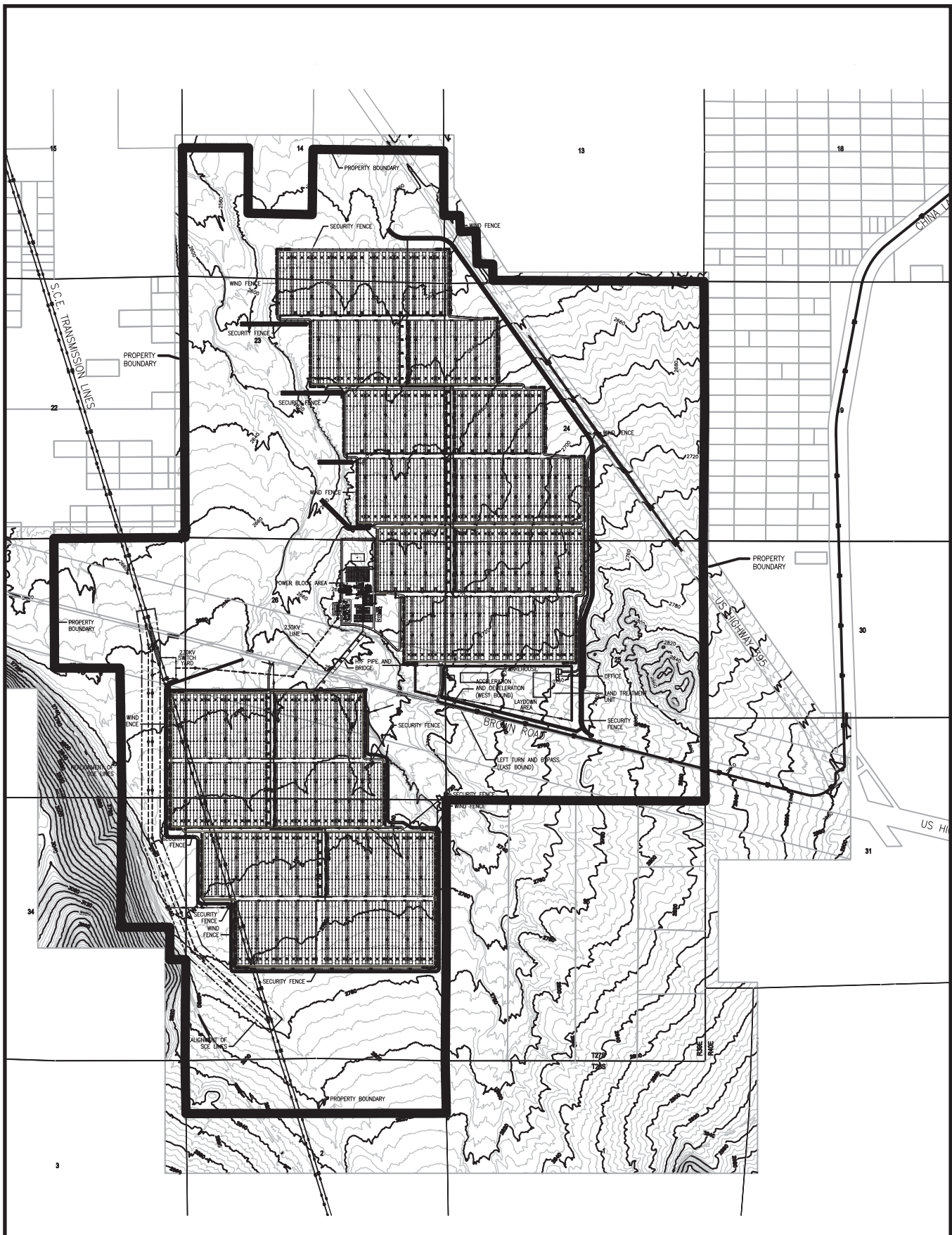
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- SM 2010c - Solar Millenium LLC/N. Tenenbaum (tn 55162). BLM Plan of Development-4th Update, dated 2/2/2010. Submitted to CEC/Docket Unit on 2/2/2010.
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- SM 2010g - Solar Millenium/A. Harron (tn 55174). Applicant's Responses to California Energy Commission Data Requests, Data Request 53 & Additional Information, dated 2/3/2010. Submitted to CEC/Docket Unit on 2/4/2010.
- SM 2010h - Solar Millennium/A. Harron 55217 Complete Response for Data Request 8, dated 2/5/2010. Submitted to CEC/Docket Unit on 2/5/2010.
- SM 2010i - Solar Millennium/A. Harron (tn 55289). "Applicant's Supplemental Data Response Information for Data Requests Biological Resources (DR 62), Cultural Resources (DR 106 to 109), Soils & Water (DR 145, 148, 182-184, 186), Land Use/Recreation/Wilderness (DR 253 to 256), Traffic (DR 195, 197, 199-201, 203) and Noise (DR 263-264), and Air Permit Application for an Emergency Generator", dated 2/10/2010. Submitted to CEC/Docket Unit on 2/10/2010.
- SM 2010j - Solar Millenium/A. Harron (tn 55382). Responses to Energy Commission Data Requests for Alternatives & Cultural Resources, dated 2/12/2010. Submitted to CEC/Docket Unit on 2/16/2010.
- SM 2010k - Solar Millenium/B. Owens (tn 55516). Responses to Energy Commission Data Requests for Cultural Resources and Soils & Water Resources, dated 2/19/2010. Submitted to CEC/Docket Unit on 2/22/2010.

SM 2010l - Solar Millenium/B. Owens (tn 55625). Responses to Energy Commission Data Requests for Biological Resources (DR 61) & Land Use/Recreation/Wilderness (DR 257-261), dated 2/19/2010. Submitted to CEC/Docket Unit on 2/23/2010.

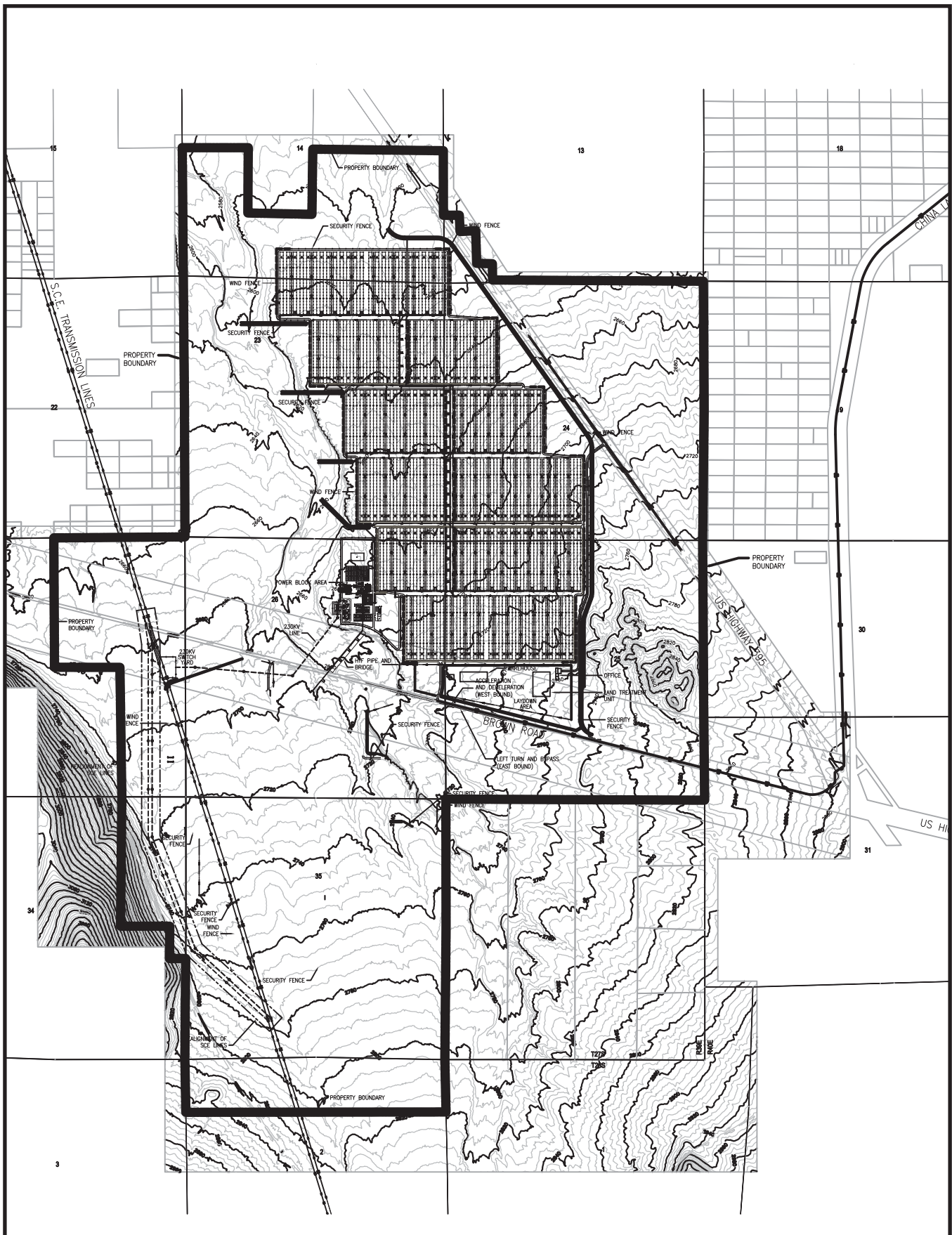
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PROJECT DESCRIPTION- FIGURE 1
Ridgecrest Solar Power Project - Both Units



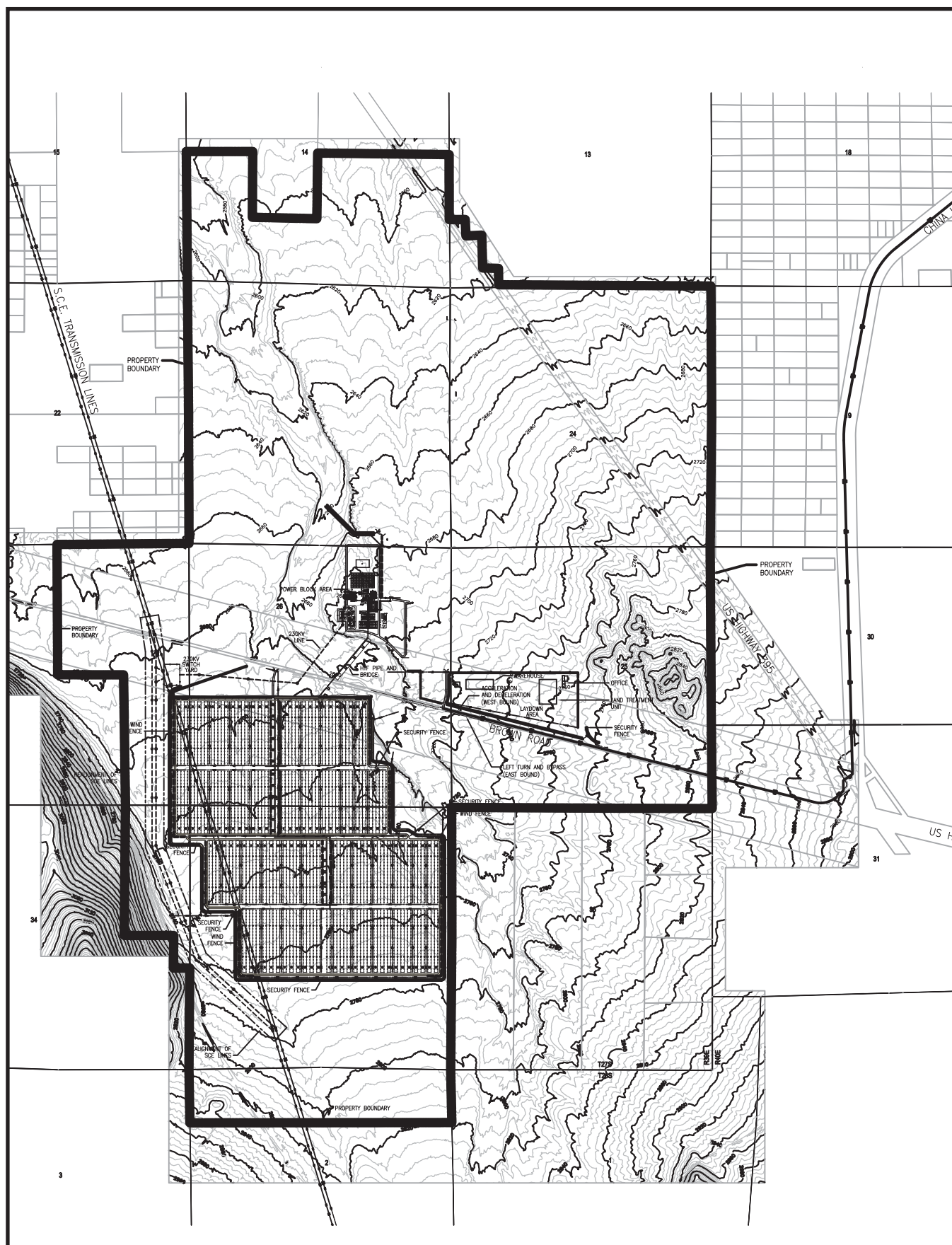
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 Source: AECOM

PROJECT DESCRIPTION- FIGURE 2
Ridgecrest Solar Power Project - Northern Unit



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 Source: AECOM

Ridgecrest Solar Power Project - Southern Unit

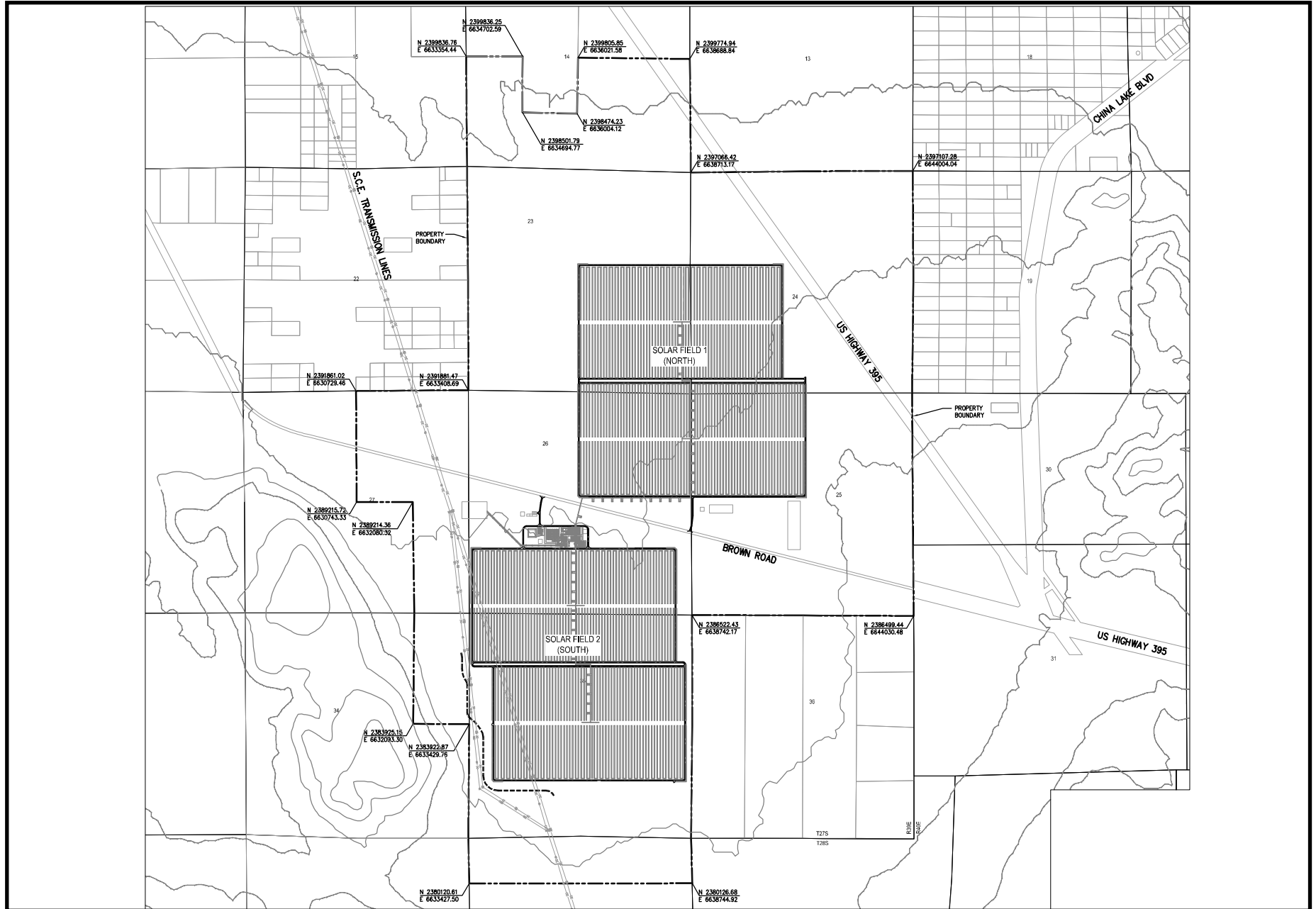


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Source: AECOM

PROJECT DESCRIPTION - FIGURE 4 Ridgecrest Solar Power Project - Original Proposed Project

MARCH 2010

PROJECT DESCRIPTION



PROJECT DESCRIPTION - FIGURE 5
Ridgecrest Solar Power Project - Power Generation Process Diagram

MARCH 2010

PROJECT DESCRIPTION

